Dimethylcarbamoyl Chloride

79-44-7

Hazard Summary

Dimethylcarbamoyl chloride is used as an intermediate in the production of pharmaceuticals, pesticides, and dyes. Acute (short-term) inhalation exposure to dimethylcarbamoyl chloride has been observed to result in damaged mucous membranes of the nose, throat, and lungs, and cause difficulty in breathing in rats. No information is available on the chronic (long-term), reproductive, developmental, or carcinogenic health effects of dimethylcarbamoyl chloride in humans. Nasal tract carcinomas have been observed in rats and male hamsters following inhalation exposure. EPA has not classified dimethylcarbamoyl chloride for potential carcinogenicity.

Please Note: The main sources of information for this fact sheet are the Hazardous Substances Data Bank (HSDB) (3), a database of summaries of peer-reviewed literature, and the International Agency for Research on Cancer (IARC) monographs on chemicals carcinogenic to humans. (5)

Uses

• Dimethylcarbamoyl chloride is used as a chemical intermediate in the production of pharmaceuticals and pesticides and in dye synthesis. (1-3)

Sources and Potential Expo sure

Occupational exposure to dimethylcarbamoyl chloride may occur during its manufacture or use. (1,2)

Assessing Personal Exposure

 No information was located regarding the measurement of personal exposure to dimethylcarbamoyl chloride.

Health Hazard Information

Acute Effects:

- A worker suffered from eye irritation and liver disturbance following occupational exposure to dimethylcarbamoyl chloride (duration of exposure not specified). (1,3)
- Acute inhalation exposure to dimethylcarbamoyl chloride has been observed to result in damaged mucous membranes of the nose, throat, and lungs and cause difficulty in breathing in rats. (1,3)
- Skin irritation has been observed in rats and rabbits following acute dermal exposure. (1,3)
- When dimethylcarbamoyl chloride is placed in rabbits' eyes, it has caused conjunctivitis and keratitis. (1,3)
- Tests involving acute exposure of rats have demonstrated dimethylcarbamoyl chloride to have high acute toxicity via inhalation and moderate acute toxicity via ingestion. (4)

Chronic Effects (Noncancer):

- No information is available on the chronic health effects of dimethylcarbamoyl chloride in humans or animals.
- EPA has not established a Reference Concentration (RfC) or a Reference Dose (RfD) for dimethylcarbamoyl chloride.

Reproductive/Developmental Effects:

• No information is available on the reproductive or developmental effects of dimethylcarbamoyl chloride in humans or animals.

Cancer Risk:

- There are inadequate data on the carcinogenic effects of dimethylcarbamoyl chloride in humans. (1,3,5,6)
- Nasal tract carcinomas have been observed in rats and male hamsters following inhalation exposure. (3,5,6)
- Skin tumors have been observed among dermally exposed mice. (1,3,6)
- Local sarcomas have been observed following subcutaneous injection in mice. (1,3,6)

Physical Properties

- The chemical formula for dimethylcarbamoyl chloride is C₃ H₆ CINO, and its molecular weight is 107.6 g/mol. (1,3)
- Dimethylcarbamoyl chloride is a clear liquid at room temperature. (1,3)
- The odor threshold for dimethylcarbamoyl chloride has not been established.
- EPA has not classified dimethylcarbamoyl chloride for potential carcinogenicity.

Note: There are very few health numbers or regulatory/advisory numbers for dimethycarbamoyl chloride; thus, a graph has not been prepared for this compound. The health information cited in this fact sheet was obtained in December 1999.

Conversion Factors:

To convert concentrations in air (at 25°C) from ppm to mg/m^3 : $mg/m^3 = (ppm) \times (molecular weight of the compound)/(24.45). For dimethylcarbamoyl chloride: 1 ppm = 4.4 mg/m³.$

Summary created in April 1992, updated January 2000

References

- 1. International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man: Some Carbamates, Thiocarbamates and Carbazides. Volume 12. World Health Organization, Lyon. 1976.
- 2. M. Sittig. Handbook of Toxic and Hazardous Chemicals and Carcinogens. 2nd ed. Noyes Publications, Park Ridge, NJ. 1985.
- 3. U.S. Department of Health and Human Services. Hazardous Substances Data Bank (HSDB, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.
- 4. U.S. Department of Health and Human Services. Registry of Toxic Effects of Chemical Substances (RTECS, online database). National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.
- 5. International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans: Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1 to 42. Supplement 7. World Health Organization, Lyon. 1987.
- 6. U.S. Department of Health and Human Services (DHHS). The 8th Report on Carcinogens. 1998 Summary. Public Health Service, National Toxicology Program. Research Triangle Park, NC. 1998.