# N-Nitroso-n-methylurea

684-93-5

# **Hazard Summary**

N-Nitroso-n-methylurea has been studied in mutagenicity and genetics studies and for use as a cancer chemotherapy agent. No commercial use of N-nitroso-n-methylurea is known. Acute (short-term) exposure toN-nitroso-n-methylurea in humans causes dermatitis. No information is available on the chronic (long-term), reproductive, developmental, or carcinogenic effects of N-nitroso-n-methylurea in humans or animals. Tumors have been reported in the offspring of animals treated with N-nitroso-n-methylurea during their pregnancy. Animal studies have reported tumors of the brain, spinal cord, nerves, stomach, pancreas, and kidneys from oral exposure to N-nitroso-n-methylurea. EPA has classified N-nitroso-n-methylurea as a Group B2, probable human carcinogen.

Please Note: The main sources of information for this fact sheet are the International Agency for Research on Cancer's (IARC's) Monograph on the Evaluation of the Carcinogenic Risk of N-Nitroso-n-Methylurea (1), the Hazardous Substances Data Bank (HSDB) (2), a database of summaries of peer-reviewed literature, and the Registry of Toxic Effects of Chemical Substances (RTECS) (3), a database of toxic effects that are not peer reviewed.

### Uses

- N-Nitroso-n-methylurea was used in the past for the laboratory synthesis of diazomethane, but it has been largely replaced by other reagents. (1,5)
- N-Nitroso-n-methylurea has been studied in mutagenicity and genetics studies and for use as a cancer chemotherapy agent (alone or in combination with cyclophosphamide). (1,5)

# Sources and Potential Exposure

- Occupational exposure to N-nitroso-n-methylurea may occur for a small number of individuals, primarily those who use the chemical in research laboratories. (1)
- No information is available on environmental exposure to N-nitroso-n-methylurea.

# Assessing Personal Exposure

• No information is available on the assessment of personal exposure to N-nitroso-n-methylurea.

# Health Hazard Information

#### Acute Effects:

- N-Nitroso-n-methylurea causes dermatitis in humans. (2)
- Acute animal tests in rats have shown N-nitroso-n-methylurea to have high acute toxicity from oral exposure. (3)

#### Chronic Effects (Noncancer):

• No information is available on the chronic (long-term) effects of N-nitroso-n-methylurea in humans or animals.

 EPA) has not established a Reference Concentration (RfC) or a Reference Dose (RfD) for N-nitroson-methylurea. (4)

#### Reproductive/Developmental Effects:

- No information is available on the reproductive or developmental effects of N-nitroso-n-methylurea in humans.
- Animal studies have reported tumors of the nervous system and kidneys in the offspring of rats treated with N-nitroso-n-methylurea during their pregnancy. (1)

#### Cancer Risk:

- No information is available on the carcinogenic effects of N-nitroso-n-methylurea in humans.
- Animal studies have reported tumors of the brain, spinal cord, nerves, stomach, pancreas, and kidneys from oral exposure to N-nitroso-n-methylurea. (1,2,5)
- Skin tumors have been reported in mice, rats, and hamsters when N-nitroso-n-methylurea was administered topically. (5)
- EPA has classified N-nitroso-n-methylurea as a Group B2, probable human carcinogen. (4)

# **Physical Properties**

- N-Nitroso-n-methylurea exists as pale, yellow crystals. (2)
- The odor threshold for N-nitroso-n-methylurea is not available.
- The chemical formula for N-nitroso-n-methylurea is  $C_2 H_5 N_3 O_2$ , and the molecular weight is 103.10 g/mol.(1)
- The vapor pressure and the log octanol/water partition coefficient (log K ow ow n-methylurea.

Note: There are very few health numbers or regulatory/advisory numbers for N-nitroso-n-methylurea; thus, a graph has not been prepared for this compound. The health information cited in this factsheet was obtained in December 1999.

#### Conversion Factors:

To convert concentrations in air (at 25 °C) from ppm to mg/m :  $mg/m_3^3 = (ppm) \times (molecular weight of the compound)/(24.45)$ . For N-nitroso-n-methylurea: 1 ppm = 4.2 mg/m .

### References

Summary created in April 1992; updated in January 2000

- 1. International Agency for Research on Cancer (IARC). IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Volume 17. World Health Organization, Lyon. 1978.
- 2. 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.
- 3. 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.
- 4. U.S. Environmental Protection Agency. Health Effects Assessment Summary Tables. FY 1997 Update. Office of Research and Development, Office of Emergency and Remedial Response, Washington, DC. EPA/540/R-97-036. 1997.
- 5. U.S. Department of Health and Human Services (DHHS). <u>The 8th Report on Carcinogens. 1998 Summary</u>. Public Health Service, National Toxicology Program. 1998.