N–Nitroso–n–methylurea

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 to N–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literature, and the Registry of Toxic Effects of Chemical Substances (RTECS) (3), a database of toxic effects that are not peer reviewed.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-nitroso-n-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\textsubscript{2}H\textsubscript{5}N\textsubscript{3}O\textsubscript{2}, and the molecular weight is 103.10 g/mol. (1)
- The vapor pressure and the log octanol/water partition coefficient (log K\textsubscript{ow}) are not available for N-nitroso-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\textsuperscript{3}: mg/m\textsuperscript{3} = (ppm) × (molecular weight of the compound)/(24.45). For N-nitroso-n-methylurea: 1 ppm = 4.2 mg/m\textsuperscript{3}.

References
Summary created in April 1992; updated in January 2000