N-Methyl-2-pyrrolidone (vapour)[1]

Supplement 2002

MAK value (1994)	**19 ml/m³ (ppm) ≙ 80 mg/m³**
Peak limitation (2002)	**Category II, excursion factor 2**
Absorption through the skin (1992)	**H**
Sensitization	**–**
Carcinogenicity	**–**
Prenatal toxicity (1994)	**Pregnancy Risk Group C**
Germ cell mutagenicity	**–**
BAT value	**–**
Synonyms	1-methylazacyclopentan-2-one *N*-methyl-2-ketopyrrolidine *N*-methyl-2-oxypyrrolidine *N*-methylpyrrolidinone *N*-methyl-2-pyrrolidinone 1-methyl-5-pyrrolidinone *N*-methylpyrrolidone 1-methyl-2-pyrrolidone
Chemical name (CAS)	1-methyl-2-pyrrolidinone
CAS number	872-50-4

Peak Limitation Category

In a multi-generation study in rats, the body weight development of the pups was delayed after exposure to *N*-methyl-2-pyrrolidinone concentrations of 116 ml/m³. The NOEC (no observed effect concentration) was 206 mg/m³ (50 ml/m³). The MAK value was therefore set at 80 mg/m³ (19 ml/m³) ("*N*-methyl-2-pyrrolidone", Volume 10, present series). In a 2-year study, no histopathological damage was found in the noses of rats after concentrations of 400 mg/m³ (about 100 ml/m³) (Lee *et al*. 1987). Eye irritation and headaches were reported after exposure at the workplace to 0.7 ml/m³.

[1] A more recent supplement follows.

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Concentrations of 16 ml/m^3 were described as "immediately uncomfortable". Concentrations of 49 to 83 ml/m^3 were reported as being "unbearable". These were 8-hour mean values, and the occurrence of peak concentrations can be assumed, which could have been responsible for the effects (Beaulieu and Schmerber 1991).

In a study with volunteers, however, no symptoms were observed after exposure for 8 hours to 12 ml/m^3 (Åkesson and Paulsson 1997). These findings contradict the results of Beaulieu and Schmerber (1991) with exposure to 16 ml/m^3. The results of the study by Åkesson and Paulsson (1997) are considered to be more significant as the level of exposure was well monitored. It is unclear whether irritation is the critical effect. The classification of the substance in Peak Limitation Category II has therefore been provisionally retained, and an excursion factor of 2 has been set.

7 References

Åkesson B, Paulsson K (1997) Experimental exposure of male volunteers to *N*-methyl-2-pyrrolidone (NMP): acute effects and pharmacokinetics of NMP in plasma and urine. *Occup Environ Med 54*: 236–240

Beaulieu HJ, Schmerber KR (1991) M-Pyrol™ (NMP) use in the microelectronics industry. *Appl Occup Environ Hyg 6*: 874–880

Lee KP, Chromey NC, Culik R, Barnes JR, Schneider PW (1987) Toxicity of *N*-methyl-2-pyrrolidone (NMP): teratogenic, subchronic, and two-year inhalation studies. *Fundam Appl Toxicol 9*: 222–235

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