# **N-PHENYL-2-NAPHTHYLAMINE (Group 3)**

## A. Evidence for carcinogenicity to humans (inadequate)

No excess of bladder tumours was found among men in a rubber processing factory with known exposure to N-phenyl-2-naphthylamine (which contained small amounts of 2-naphthylamine [see p. 261]); however, a study of rubber workers who were not exposed to 2-naphthylamine did show an increased incidence of bladder tumours. In the latter study, the men were exposed to several compounds, which probably included N-phenyl-2-naphthylamine<sup>1</sup>.

## **B.** Evidence for carcinogenicity to animals (*limited*)

*N*-Phenyl-2-naphthylamine was tested for carcinogenicity by oral administration in mice, rats, hamsters and dogs. No carcinogenicity was reported in most experiments<sup>1-4</sup>. In one experiment, the total tumour incidence and the incidence of hepatocellular tumours were increased in male mice of one strain<sup>1</sup>. In another experiment, two rare kidney tumours were seen in female mice<sup>2</sup>. Subcutaneous administration to mice increased the total tumour incidence<sup>1</sup> and the incidences of lung<sup>5</sup> and liver neoplasms<sup>1</sup>. Repeated subcutaneous injection after previous unilateral nephrectomy in mice resulted in a significant increase in the total tumour incidence and in the incidences of haemangiosarcomas of the kidney and of carcinomas of the lung<sup>6,7</sup>. Following exposure of mice by inhalation in one study, lung carcinomas were reported<sup>8</sup>.

### C. Other relevant data

There is some evidence from one study of 19 human volunteers that up to 0.03% of a single 10-mg dose of N-phenyl-2-naphthylamine is converted to 2-naphthylamine. Similarly, the urine of workers exposed to N-phenyl-2-naphthylamine was found to contain 2-naphthylamine, indicating that N-phenyl-2-naphthylamine is dephenylated in the human body<sup>1</sup>. No data were available on the genetic effects of N-phenyl-2-naphthylamine in humans. It was reported not to be mutagenic to bacteria<sup>9</sup>.

### References

<sup>1</sup>IARC Monographs, 16, 325-341, 1978

- <sup>2</sup>National Toxicology Program (1987) Technical Report on the Toxicology and Carcinogenesis Studies of N-Phenyl-2-naphthylamine (CAS No. 135-88-6) in F344/N Rats and B6C3F<sub>1</sub> Mice (Feed Studies) (Tech. Rep. No. 333; NIH Publ. No. 87-2589), Research Triangle Park, NC
- <sup>3</sup>Ketkar, M.B. & Mohr, U. (1982) The chronic effects of magenta, paramagenta and phenyl-βnaphthylamine in rats after intragastric administration. *Cancer Lett.*, 16, 203-206
- <sup>4</sup>Green, U., Holste, J. & Spikermann, A.R. (1979) A comparative study of the chronic effects of magenta, paramagenta and phenyl-β-naphthylamine in Syrian golden hamsters. J. Cancer Res. clin. Oncol., 95, 51-55
- <sup>5</sup>Wang, H., Dzeng, R. & Wang, D. (1982) The carcinogenicity of *N*-phenyl-2-naphthylamine in ICR mice (Chin.). Acta biol. exp. sin., 15, 199-207
- <sup>6</sup>Wang, D., Zeng, R. & Wang, H. (1983) A comparative study on carcinogenic activity of PBNA and PANA in unilaterally nephrectomized TA-1 mice (Chin.). Acta sci. circumstantiae, 3, 262-266

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- <sup>8</sup>You, X. & Yao, Y. (1981) Experimental study of inhalation carcinogenesis of N-phenyl-2naphthylamine aerosol on mice (Chin.). Acta biol. exp. sin., 14, 139-143

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