

MAGENTA (Group 3) and MANUFACTURE OF MAGENTA (Group 1)

A. Evidence for carcinogenicity to humans (*inadequate* for magenta; *sufficient* for the manufacture of magenta)

The manufacture of magenta* was first reported to be associated with bladder tumours in 1895. One study in the UK in 1954 showed an association between magenta production and an increased incidence of bladder cancer, with three deaths (0.13 expected)¹. An excess of bladder tumours was also noted in one Italian plant manufacturing new fuchsin ('new' magenta) and safranine T (5 observed deaths, 0.08 expected). In addition to magenta, the suspected agents include the precursors *ortho*-toluidine (see p. 362), 4,4'-methylene bis(2-methylaniline) (see p. 246) and *ortho*-nitrotoluene².

B. Evidence for carcinogenicity to animals (*inadequate* for magenta)

Magenta products were tested for carcinogenicity in mice, rats and hamsters by subcutaneous and oral administration. Subcutaneous administration of *para*-magenta, a component of commercial magenta, induced local sarcomas in rats¹. Oral administration of magenta or *para*-magenta to rats and hamsters for life at the maximum tolerated dose produce no treatment-related tumour^{3,4}. In one limited study in mice, there was no increase in tumour incidence following oral administration of commercial magenta¹.

C. Other relevant data

No data were available on the genetic and related effects of magenta in humans⁵.

Technical-grade magenta consists of a mixture of magenta I, *para*-magenta and related compounds. In the studies considered below, one of these isomers was assayed rather than the complete mixture⁵. *para*-Magenta did not induce transformation of Syrian hamster embryo cells or unscheduled DNA synthesis in rat hepatocytes *in vitro*. It did not induce recombination in yeast. *para*-Magenta and magenta I were mutagenic to bacteria. *para*-Magenta did not induce prophage⁵.

References

¹IARC Monographs, 4, 57-64, 1974

²Rubino, G.F., Scansetti, G., Piolatto, G. & Pira, E. (1982) The carcinogenic effect of aromatic amines: an epidemiological study on the role of *o*-toluidine and 4,4'-methylene bis(2-methylaniline) in inducing bladder cancer in man. *Environ. Res.*, 27, 241-254

*Included in the term 'magenta' are *para*-magenta and ring-methylated derivatives.

- ³Green, 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
- ⁴Ketkar, M.B. & Mohr, U. (1982) The chronic effects of magenta, paramagenta and phenyl- β -naphthylamine in rats after intragastric administration. *Cancer Lett.*, 16, 203-206
- ⁵IARC Monographs, Suppl. 6, 356-358, 1987