

## **DIMETHYL SULPHATE (Group 2A)**

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

Four cases of bronchial carcinoma were reported in men exposed occupationally to dimethyl sulphate<sup>1</sup>. Additional case reports have since appeared: a case of pulmonary carcinoma in a man exposed for seven years to 'small amounts' of dimethyl sulphate but to larger amounts of bis(chloromethyl)ether and chloromethyl methyl ether (see p. 131)<sup>2</sup>, and a case of choroidal melanoma in a man exposed for six years to dimethyl sulphate<sup>3</sup>.

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

Dimethyl sulphate produced mainly local tumours in rats following its inhalation or subcutaneous injection; it produced tumours of the nervous system after prenatal exposure<sup>1</sup>.

### **C. Other relevant data**

Dimethyl sulphate is an alkylating agent<sup>4</sup>. No data were available on the genetic and related effects of this compound in humans.

Dimethyl sulphate induced both structural and numerical chromosomal aberrations in bone-marrow cells of rats treated *in vivo* and chromatid breaks in mouse embryos treated transplacentally. It alkylated DNA in rats treated *in vivo* and in cultured rodent cells. It induced sister chromatid exchanges, unscheduled DNA synthesis and DNA strand breaks in human and rodent cells *in vitro*, and chromosomal aberrations and mutation in cultured rodent cells. It induced sex-linked recessive lethal mutations in *Drosophila* and mutation and mitotic recombination in yeast. Conflicting results were obtained for chromosomal aberrations and mutation in plants. It induced mutation and DNA damage in bacteria<sup>4</sup>.

**References**

<sup>1</sup>IARC *Monographs*, 4, 271-276, 1974

<sup>2</sup>Bettendorf, U. (1977) Occupational lung cancer after inhalation of alkylating compounds. Dichlorodimethyl ether, monochlorodimethyl ether and dimethyl sulphate (Ger.). *Dtsch. med. Wochenschr.*, 102, 396-398

<sup>3</sup>Albert, D.M. & Puliafito, C.A. (1977) Choroidal melanoma: possible exposure to industrial toxins. *New Engl. J. Med.*, 296, 634-635

<sup>4</sup>IARC *Monographs, Suppl. 6*, 269-271, 1987