HYDRAZINE (Group 2B)

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

Two reports of cancer mortality in workers exposed to hydrazine have appeared in recent years. Choroidal melanoma was observed in one man who had been exosed to hydrazine for six years[1]. A preliminary report of an epidemiological study of men engaged in hydrazine manufacture revealed no unusual excess of cancer. This study comprised 423 men, with a 64% vital status ascertainment. None of the five cancers reported (three of the stomach, one prostatic and one neurogenic) occurred in the group with the highest exposure[2]. A follow-up study of this cohort[3] has extended it to 1982. Mortality from all causes was not elevated (49 observed, 61.5 expected), and the only excess entailed two lung cancer cases within the highest exposure category, with a relative risk of 1.2 (95% confidence interval, 0.2-4.5).

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

Hydrazine has been tested in mice by oral administration, producing liver and mammary tumours and lung tumours in both P and F_1 generations; after intraperitoneal administration to mice, it produced lung tumours, leukaemias and sarcomas[4,5]. After oral administration to rats, it produced lung and liver tumours[4]. When tested by inhalation, it produced benign and malignant nasal tumours in rats, benign nasal polyps, a few colon tumours and thyroid adenomas in hamsters, and a slight increase in the incidence of lung adenomas in mice[6].

C. Other relevant data

No data were available on the genetic and related effects of hydrazine in humans.

Hydrazine did not induce dominant lethal mutation or micronuclei in bone-marrow cells of mice treated *in vivo*. It induced unscheduled DNA synthesis in human cells *in vitro*. It did not induce chromosomal aberrations in rat cells *in vitro* but induced sister chromatid exchanges in Chinese hamster cells; conflicting results were obtained for the induction of mutation in mouse lymphoma cells. It induced DNA strand breaks in rat hepatocytes *in vitro*. Hydrazine induced somatic mutation in *Drosophila* and chromosomal aberrations and mutation in plants. It was mutagenic to yeast and bacteria and induced DNA damage in bacteria[7].

References

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