AMITROLE (Group 2B)

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

In a small cohort study of 348 Swedish railroad workers exposed for 45 days or more to amitrole, 2,4-D or 2,4,5-T (see p. 256) and to other organic (e.g., monuron and diuron) and inorganic chemicals (e.g., potassium chlorate), there was an excess of deaths from malignant neoplasms (17 observed, 11.9 expected). There was a statistically significant excess of all cancers among those exposed to amitrole and chlorophenoxy herbicides: six deaths from cancer with 2.9 expected, of which all six — with 1.8 expected ($p < 0.005$) — occurred in those first exposed ten years or more before death. No significant excess was seen among those exposed mainly to amitrole: five deaths from cancer with 3.3 expected, three deaths with two expected occurring in those first exposed ten years or more before death[1]. The role of amitrole exposure is therefore not possible to evaluate.

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

Amitrole was tested for carcinogenicity in mice by oral administration, skin application and transplacental exposure, in rats by oral and subcutaneous administration and in hamsters by oral administration. After oral administration, it produced thyroid tumours and benign and malignant liver tumours in mice of each sex, benign and malignant thyroid tumours in male and female rats and benign pituitary tumours in female rats[1].

C. Other relevant data

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

Amitrole did not induce micronuclei in bone-marrow cells of mice or unscheduled DNA synthesis in hepatocytes of rats treated *in vivo*. It induced transformation of Syrian hamster embryo cells and increased the incidence of sister chromatid exchanges in Chinese hamster ovary cells; both positive and negative results were reported for mutation in cultured rodent cells. Amitrole did not induce sex-linked recessive lethal mutations or aneuploidy in *Drosophila*; it induced chromosomal aberrations in plants. Both positive and negative results were obtained in assays for gene conversion and mutation in fungi, but amitrole induced aneuploidy. It was not mutagenic to bacteria and did not induce DNA damage[2].

References

[1]*IARC Monographs*, *41*, 293-317, 1986

[2]*IARC Monographs*, *Suppl. 6*, 64-67, 1987