COAL-TAR PITCHES (Group 1)

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

A mortality analysis in the UK from 1946 showed a greatly increased risk for scrotal cancer among patent-fuel workers; furthermore, a large number of case reports describe the development of skin (including the scrotum) cancer in workers exposed to coal-tars (see p. 175) or coal-tar pitch[1]. Several epidemiological studies have shown excesses of lung and bladder cancer among workers exposed to pitch fumes in aluminium production plants[2]. A slight excess of lung cancer was found among furnace and maintenance workers exposed to coal-tar pitch fumes in a calcium carbide production plant[3]. A cohort study of US roofers indicated an increased risk for cancer of the lung and suggested increased risks for cancers of the oral cavity, larynx, oesophagus, stomach, skin and bladder and for leukaemia. Some support for excess risks of lung, laryngeal and oral-cavity cancer is provided by other studies of roofers. One study showed a small excess of bladder cancer in tar distillers and in patent-fuel workers. An elevated risk of cancer of the renal pelvis was seen in workers exposed to 'petroleum or tar or pitch'[1]. One study of millwrights and welders exposed to coal-tars and coal-tar pitch in a stamping plant showed significant excesses of leukaemia and of cancers of the lung and digestive organs[4].

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

Application of coal-tar pitches and extracts of coal-tar pitches to the skin of mice produced malignant skin tumours. Extracts of coal-tar pitches had both initiating and promoting activities in mouse skin[1,5,6].

C. Other relevant data

No data were available on the genetic and related effects of coal-tar pitches in humans.

Extracts of coal-tar pitches and 'coal-tar' paints (formulated with coal-tar pitches) were mutagenic to *Salmonella typhimurium* in the presence of an exogenous metabolic system. Extracts of emissions from a roofing-tar pot (coal-tar pitch-based tar) enhanced viral transformation in Syrian hamster embryo cells but did not cause DNA strand breaks. The same material induced sister chromatid exchanges and mutation in cultured rodent cells, both in the presence and absence of an exogenous metabolic system, and was mutagenic to *S. typhimurium* in the presence of an exogenous metabolic system[7].

References

[1]*IARC Monographs, 35*, 83-159, 1985

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[7]*IARC Monographs, Suppl. 6*, 186, 1987