

CADMIUM IN THE ENVIRONMENTIS CADMIUM A CARCINOGEN?

(Contribution to "Cadmium Seminar" organised by Natural Environment Research Council on 15th March, 1973).

5. Session III. Assessment of Damage to Man

5.1 'Is Cadmium a carcinogen' (Paper K, Dr F J C Roe)

Sarcomas tend to arise at the site of subcutaneous or intramuscular injection of various cadmium-containing compounds in rats. Animals so treated may also develop acute and permanent testicular atrophy and castration changes of the pituitary gland. Benign interstitial-cell tumours often develop in animals with cadmium-induced testicular atrophy. Vascular damage by cadmium is probably responsible for the testicular atrophy. By itself, the occurrence of sarcomas at the site of subcutaneous or intramuscular injection is not now regarded as adequate evidence that a chemical agent is a carcinogen; nor is the occurrence of interstitial-cell tumours of the testis acceptable evidence of carcinogenicity in the case of cadmium, since the effect is almost certainly an indirect consequence of testicular atrophy.

Cadmium is poorly absorbed from the gastro-intestinal tract. There is no report of an increased risk of cancer at any site in laboratory animals exposed to any cadmium compound by mouth. Inhaled cadmium is better absorbed but the consequences of inhalation of cadmium have not been studied in animals. Parenterally-injected cadmium and cadmium absorbed from the gut or lungs tend to accumulate in the liver and proximal convoluted tubules of the kidney. Kidney damage results but there is no evidence that accumulation

of cadmium in the kidney increases the risk of cancer of that organ.

Reports of an increased risk of prostatic cancer in cadmium workers have not been substantiated by further epidemiological studies. No changes have been seen in the prostate or other genital glands of male rats or mice exposed to cadmium by mouth or by parenteral injection.

It is concluded that there is no unequivocal evidence that exposure to cadmium by any natural route constitutes a carcinogenic hazard.