The combination of the injuries caused a greatly increased lethality in comparison with that due to irradiation alone. Our results also revealed a significant effect in combined injured mice, though it was not as distinct as after irradiation only.

INFLUENCE OF CYSTEAMINE OR CYSTAMINE ON RADIATION LATE EFFECTS IN C57BL/6 MICE. D. J. MEWISSEN, J. H. RUST and J. HAREN, Department of Radiobiology, Free University of Brussels.

Late sequelae of sublethal whole body irradiation were investigated in various groups of C57 BL/6 mice, assigned to sham irradiated control groups and to matching experimental groups pretreated with cysteamine or cystamine. Several irradiation schedules were used, including a single dose of 280, 440 or 550 rad and 2 successive doses at a 7-day interval, of 140, 220 or 280 rad.

Complete results indicate that the tumour spectrum in control mice is modulated by whole body radiation in a complex non-monotonic incidence-dose relationship. Following the highest dose levels the tumour yield tended to decrease. The relative incidence of some tumour types was diversely affected by radiation. In groups of animals pretreated with cysteamine or cystamine, tumour spectra were modulated primarily as a function of age specific incidence as observed in matching controls.

This work was performed under Euratom contract.

EFFECT OF ^{60}Co - γ -IRRADIATION ON THE MIXED DISULPHIDES OF RADIOPROTECTOR MEG IN SPLITTING WITH ENZYMES OF RAT LIVER CYTOPLASM. M. HORVÁTH and J. HOLLAND, National Institute of Oncology, Budapest.

According to the theory of Eldjarn and Pihl, mixed disulphides formed by radioprotective amino thiols and protein SH groups can be split by enzymes in the organism and the native structure of proteins thus restored.

In our experiments mixed disulphides of MEG and albumin/haemoglobin were split by soluble enzyme fraction of rat liver homogenate (cytosol). The splitting is performed by small molecules; dialysed cytosol has no

effect, neither has the suspension of particles of mitochondria. Upon ^{60}Co - γ -irradiation the mixed disulphide bridge is stabilized and is more resistant to splitting at doses in the Mrad range. Increased resistance up to 700% with albumin-MEG and 160% with haemoglobin-MEG mixed disulphide was observed compared with unirradiated control.

INTERACTION OF X-IRRADIATION AND DRUGS ON THE ACTIVITY OF MEMBRANE BOUND ENZYMES. A. W. T. KONINGS and E. B. DRIJVER, Laboratory of Radiopathology, State University of Groningen.

The study of the interaction of radiation and drugs on the level of membrane dependent enzyme activity might yield information concerning the nature and meaning of radiation induced membrane damage. The effects of some pharmacological agents on the activities of membrane bound enzymes have been investigated in normal and α -tocopherol depleted mice. Special attention has been given to the plasma-membrane enzyme, alkaline phosphatase. This enzyme showed a decreased activity in the α -tocopherol depleted liver compared with the normal liver. Total body x-irradiation of 650 rad gave a clear rise in enzyme activity of the normal liver and only a slight increase in the liver of the diet mouse. Intraperitoneally injected Novocaine or cysteamine enhanced the radiation induced enzyme activity in normal but not in the α -tocopherol depleted liver. These results suggest a regulation of the enzyme activity by the micro-environment in the membrane. Both irradiation and drugs might have given a relief of constraint, being associated with an increased enzyme activity. The inability of the drugs to enhance the radiation induced alkaline phosphatase in the diet liver, points to a limited amount of enzyme molecules in the plasma membrane of the α -tocopherol depleted animals.

COMBINED RADIATION AND DRUG TREATMENT OF THE B16 MELANOMA. J. STANLEY, G. G. STEEL and R. P. HILL, Biophysics Department, Institute of Cancer Research, Sutton.

Using the lung colony assay, studies have been made of the survival of clonogenic cells following treatment of B16 melanoma with