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**CURRENT DEVELOPMENTS IN
FOOD ADDITIVE LEGISLATION
AND TOXICOLOGY**

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the drinking-water. The sodium nitrite was kept constant at a level of 0.3% in the food pellets to maintain an optimal ratio for combination with MU or EU, since *ad lib.* feeding did not ensure the simultaneous presence of both the nitrite and the alkylurea in the stomach. With the highest dose of 0.03% MU there was also a 25% increase in lymphomas. Except for a diffuse spongioblastoma and an orbital neurinoma of the optic nerve, all the neurogenic neoplasms observed were similar to those previously produced with MNU or ENU in the same strain of rat. The hazard of possible consumption of harmless precursors and the intragastric synthesis of potent nitrosourea carcinogens will have to be considered in any programme of cancer prevention.

TERATOGENIC EVALUATION OF LEAD COMPOUNDS IN MICE AND RATS

G.L. Kennedy, D.W. Arnold and J.C. Calandra
Industrial BIO-TEST Laboratories, Inc., Northbrook, Illinois 60062, USA
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Abstract—Groups of pregnant albino mice and rats were treated by gavage with doses up to 714 mg lead acetate/kg or 10 mg tetraethyllead (TEL)/kg. The compounds were administered daily during the period of rapid organogenesis (days 5-15 of pregnancy for mice and days 6-16 for rats). Maternal toxicity was observed and foetal resorption and general retardation of development were encountered at the higher dosage levels. Neither lead compound caused any congenital malformations. Foetuses derived from lead-exposed females were examined grossly and for internal structural and skeletal development, but no teratogenic response was evident, even at dose levels at which frank signs of maternal toxicity were observed. It is concluded that lead, as the acetate or as tetraethyllead, is not teratogenic to the mouse or rat.

OBSERVATIONS ON THE ORAL ADMINISTRATION AND TOXICITY OF VINYL CHLORIDE IN RATS

V.J. Feron, A.J. Speek, Marianne I. Willems, D. van Battum and A.P. de Groot
Central Institute for Nutrition and Food Research (CIVO) TNO, Utrechtseweg
48, Zeist, The Netherlands
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Abstract—Various possibilities were studied for administering vinyl chloride monomer (VCM) orally to rats. Upon storage, solutions of VCM in soya-bean oil appeared to be stable with respect to their VCM content and the fatty acid composition of the oil. In addition no oligomers of vinyl chloride or reaction products of VCM with components of the oil were detected. Stomach intubation of such solutions was considered an acceptable method of oral administration of VCM to rats in short-term toxicity studies. Within a period of 4 hr following intragastric intubation of VCM in soya-bean oil (300 mg VCM/kg body weight), over 92% of the VCM administered was recovered from the gases excreted (mainly exhaled?) by the animals. Eructation did not appear to be involved in the excretion of VCM.

VCM dissolved in soya-bean oil was administered by gavage to male and female rats at levels of 0 (controls), 30, 100 and 300 mg/kg body weight, once daily on 6 days/wk for a period of 13 wk. Several haematological,

biochemical and organ-weight values differed to a statistically significant degree from those of the controls, but these differences were considered to have only minor, if any, toxicological significance. A slight increase in liver-to-body weight ratio occurred in males and females on the highest dose level. This increase was not accompanied by liver damage, as was evident from histological examination, enzyme histochemistry and electron microscopy. The no-effect level in this 90-day study was conservatively placed at 30 mg VCM/kg body weight, but was probably higher since the effects occurring at 100 and 300 mg/kg body weight were of doubtful toxicological significance.

Indications were obtained that the feeding of rats on diets containing polyvinyl chloride (PVC) powder with a high VCM content is a more practical method for the long-term oral exposure of rats to VCM than is stomach intubation of VCM in oil. VCM was almost completely released from PVC powder during passage through the digestive tract.

BIOLOGICAL TESTING OF FOOD GROWN IN THE TRANSKEI

I.F.H. Purchase, R.C. Tustin and S.J. van Rensburg
National Research Institute for Nutritional Diseases, SA Medical Research
Council, PO Box 70, Tiervlei, Cape Province, South Africa

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Abstract—Oesophageal cancer is the commonest form of cancer occurring in the Transkei, South Africa. In an attempt to identify carcinogens contributing to this high incidence, food collected from gardens belonging to families in which a member had developed oesophageal cancer was fed to BD IX rats from conception until death. One group was fed a diet consisting of maize, beans and a salt mixture while the second group received a full Transkei diet consisting of the same ingredients with the addition of imifino (Solanum nigrum and Sonchus oleraceus). The latter group developed severe liver lesions (characterized by bile-duct proliferation and hyperplastic nodules) and epithelial-cell dysplasia of the oesophagus. This group also suffered from an increased incidence of tumours of various types. It proved impossible to breed successfully from rats on the full Transkei diet. The liver lesions were exacerbated by supplying distillate, collected when the diets were dried, to the rats as drinking-water. The effect of the distillate was probably not due to the presence of nitrosamines. The possibility that the full Transkei diet was producing these effects indirectly by the interaction of nitrites and secondary amines in the stomach was tested by the addition of sodium nitrite to the diets but this did not induce liver lesions. These results suggest that the diet collected from the Transkei contains toxic factors which produce liver and oesophageal lesions and an increased incidence of cancer in rats. These same factors may also contribute to the high incidence of oesophageal and liver cancer occurring in man in the Transkei.