87

DISPOSITION AND METABOLISM OF [^{14}C] 1,1-DICHLOROETHYLENE AFTER SINGLE ORAL ADMINISTRATION IN RATS

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1,1-Dichloroethylene (VDC, vinylidene chloride) is converted metabolically to mutagenic and carcinogenic intermediates. We have investigated the metabolic fate of ^{14}C-VDC in rats after single oral doses of 0.5; 5 and 50 mg/kg by collecting and analysing expired air, urine and feces for 72 hours following administration. The proportions of expired unchanged VDC/$^{14}CO_2$/ urinary activity were as follows: 0.5 mg/kg-0.9%/23%/52%; 50 mg/kg-20%/6%/36%. This change in the conversion rate and in the pattern of metabolites is indicative of a rapid saturation of VDC metabolism. This is consistent with previous studies on the uptake and metabolism of VDC by the isolated perfused rat liver (Reichert et al., Int.Arch.Occ.Envir.Hlth 1978, in press).
Non-volatile radioactivity within the body after 72 hr comprised 2-4% of the administered dose and was highest in the liver, the other organs containing minimal amounts only. Thus, most of the VDC is rapidly excreted either unchanged or in the form of polar metabolites. Three major metabolites were separated by thin layer chromatography and gas chromatography, the main part of activity has been identified as thiodiglycolic acid by mass spectrometry.

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