

malies. One-third of each litter was immediately examined for evidence of soft tissue anomalies by dissection under a low-power microscope. Rabbit fetuses were sexed on the basis of examination of internal genitalia. All fetuses were then eviscerated, preserved in alcohol, and subsequently cleared and stained with alizarin red-S (Dawson, 1926) for examination of skeletal anomalies.

Statistical evaluation. The Fisher exact probability test (Siegel, 1956) was used to evaluate the incidence of resorptions among litters. Maternal and fetal body weights and body measurements and maternal liver weights were analyzed statistically by an analysis of variance and the Dunnett test (Steel and Torrie, 1960). The incidence of fetal anomalies was analyzed by the Wilcoxon test as modified by Haseman and Hoel (1974).

Controls. The group of animals which was exposed only to vinyl chloride served as the control for those animals which were exposed to vinyl chloride in combination with 15% ethanol in the drinking water. The controls for animals exposed to vinyl chloride alone were exposed concurrently to filtered room air.

RESULTS

Maternal toxicity. Among mice exposed to 500 ppm of vinyl chloride by inhalation, there was a decrease in maternal weight gain and food consumption during gestation and in the absolute liver weight at the time of cesarean section compared to control values (Table 2). These effects were not observed among mice exposed to 50 ppm of vinyl chloride. Mice exposed to a combination of 500 ppm of vinyl chloride by inhalation and 15% ethanol in their drinking water also showed a decrease in weight gain during gestation and in liver weight (absolute and relative) on Day 18 of gestation. Ethanol in combination with 50 ppm of vinyl chloride also resulted in a decrease in maternal weight gain during gestation and a decrease in the absolute liver weight on Day 18 of gestation. Food consumption throughout gestation was decreased for mice exposed to both concentrations of vinyl chloride in combination with ethanol.

Except for an apparent decrease in maternal weight gain in rats (Table 3) and a decrease in food consumption for rabbits (Table 4), no signs of toxicity were observed in the adult rats or rabbits during exposure to 500 ppm of vinyl chloride. The apparent decrease in maternal weight gain among rats exposed to 500 ppm is most likely due to the lower body weight of the control animals on Day 6 and, subsequently, a higher weight gain of these animals during the later days of gestation. Among rats exposed to 2500 ppm, both the absolute and relative liver weights were significantly increased on Day 21 of gestation, but maternal weight gain was no different from that of rats exposed to filtered room air. Maternal food consumption was, however, lower than among control rats in this group. The relative liver weight on Day 21 of gestation was significantly increased among rats exposed to 2500 ppm of vinyl chloride and 15% ethanol. Maternal weight gain for this group of rats was significantly decreased during gestation. Food consumption during the exposure period was further decreased among these rats which were exposed to vinyl chloride in combination with ethanol in the drinking water.

No effect on maternal weight gain, liver weight, or food consumption was observed among rabbits exposed to 2500 ppm of vinyl chloride by inhalation. A decrease in maternal weight gain was observed among rabbits during exposure to 2500 ppm of vinyl chloride in combination with 15% ethanol (Days 6-18 of gestation), but total