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Methyl Parathion

Acute Toxicity

Route	Animal	Sex	Formulation	LD_{50} (mg/kg
Oral	Rat	Male Female	Technical	6-16 4.5-24
Oral	Mouse	Male	Technical	9.3-32
Oral	Guinea pig	____	___	41
Dermal	Rat	_____	_____	
Inhalation	Rat	Male	Technical	0.12 m (4 h

Signs of acute toxicity in laboratory animals include restlessness, muscular twitching, miosis salivation urinary incontinance, lacrimation, incoordination, prostration, convulsions, and death.

Subacute toxicity

Groups of dogs (4 in control group and 2 per group at each dose) were given diets containing 0, 5, 20, or 50 ppm methyl parathion for 12 weeks. Erythrocyte cholinesterase activity was significantly depressed in animals given the 20 or 50 ppm diets. Cholinesterase levels returned to normal 4 to 8 weeks after the test diets were withdrawn. Plasma cholinesterase levels in the 50 ppm group were depressed also. No other toxic effects were reported.

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Reproductive Effects

A three-generation reproduction study with groups of rats (10 males and 20 females per group) was done. Diets containing 0, 10 or 30 ppm methyl parathion were given to each group. The 30 ppm diet reduced reproductive performance in the F_{1a}, F_{1b}, F_{2a}, and F_{2b} litters, weanling survival in F_{1a}, F_{1b}, and F_{2a} litters and weanling weights in the F_{1a} litter. The 30 ppm diet increased the number of stillbirths in the F_{1b} and F_{2a} litters. Weanling survival was decreased by the 10 ppm diet in the F_{1a} litter, and decreased weanling weights of the F_{1b} litter occurred in the rats getting the 10 ppm diet. No effect on reproductive performance was seen, in rats at the 10 ppm level.

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Teratology

Pregnant rats were given 4 or 6 mg/kg on the 9th or the 15th day of gestation, and no increase in stillbirths or gross anomalies in the pups were observed.

Pregnant rats were given an intraperitoneal dose of 5, 10, or 15 mg/kg on the 12th day of gestation. No malformations were observed, but signs of toxicity were noted 30 minutes after injection of the methyl parathion.

Pregnant mice were given 20 or 60 mg/kg intraperitoneally on the 10th day of gestation. Cleft palate and underdeveloped sternabrae occurred at a frequency found to be statistically insignificant (P = 0.05) at both dose levels when compared with untreated controls. The 60 mg/kg dose caused mortality and suppressed growth of fetuses.

Mutagenicity

Methyl parathion was injected intraperitoneally in male mice at doses of 5, 10, 20, 50, or 100 mg/kg. (the highest two doses were lethal.) Bone marrow tissue from the femurs of these mice was examined, and no increase in incidence of chromaoscmal aborrations was observed.

Human Studies

Volunteers were given daily oral doses of as much as 20 mg (approximately 0.28 mg/kg) for up to 4 weeks without a significant decrease in plasma or red blood cell cholinesterase activity.

References

U.S. Environmental Protection Agency, Office of Pesticide Programs, Criteria and Evaluation Division. February, 1975. Initial Scientific and Minieconomic Review of Methyl Parathion. EPA 540/1-75-004. Washington, D.C.

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