

Table 1. Health Effect Levels of Fenthion in Humans and Laboratory Animals

Route	Duration	Species	NOAEL	LOAEL	Organ/Effect	Comments	Reference
Acute Duration Toxicity							
dermal	once	rat		330 mg/kg	LD ₅₀		Worthing 1983
oral	24 hours	human		0.07 mg/kg/day	Marginal plasma cholinesterase inhibition	First day of a 28-day human feeding study	EPA 1998
oral	once	calf		40 mg/kg	LD ₅₀		IPCS 2003
oral	once	rat (male)		190–315 mg/kg	LD ₅₀		Worthing 1983
oral	once	rat (female)		245–615 mg/kg	LD ₅₀		Worthing 1983
oral (gavage)	1 week	monkey	0.07 mg/kg/day	0.2 mg/kg/day	Plasma and erythrocyte cholinesterase inhibition	First week of a 2-year monkey feeding study	EPA 1998
inhalation	1 hour	rats	1,197 mg/m ³		None	One hour of exposure to an airborne concentration of 1,197 mg/m ³ caused no visible effects in rats.	ACGIH 1991
Intermediate Duration Toxicity							
dermal	21 days	rabbit	50 mg/kg/day	100 mg/kg/day	Plasma and erythrocyte cholinesterase inhibition.	Neurotoxicity, body weight and muscle fasciculation, depressed motor activity, gait abnormalities, and slight tremors occurred at higher doses.	EPA 1998
dermal	21 days	rabbit	5 mg/kg/day	50 mg/kg/day	Dermal irritation		EPA 1998
oral	28 days	human		0.02 mg/kg/day	Plasma cholinesterase was inhibited by 5%–12% within 1 week.	Threshold dose for NOEL/LOEL. 3 groups of 4 males were dosed with caplets including corn oil. Dose levels were 0, 0.02, or 0.07 mg/kg/day.	EPA 1998
Chronic Duration Toxicity							
oral	2 years	monkey	0.02 mg/kg/day	0.07 mg/kg/day	Erythrocyte cholinesterase inhibition	Plasma cholinesterase was inhibited at 0.02 mg/kg/day, which EPA considered a threshold dose	EPA 1999
oral	2 years	rat		0.2 mg/kg/day (M); 0.3 mg/kg/day (F)	Plasma, erythrocyte and brain cholinesterase inhibition	At 0.8 mg/kg/day, epididymal pathology (vacuolation), lung weight change, skin lesions, and ocular effects occurred. At 5.2 mg/kg/day, body weight decreases, mineralization (stomach and other structures), and vacuolation of the nasolacrimal duct (males) occurred. Eye and optic lesions increased in females and became evident in males and included optic nerve pathology (atrophy and neovascularization).	EPA 1998

Table 1. Health Effect Levels of Fenthion in Humans and Laboratory Animals (continued)

Route	Duration	Species	NOAEL	LOAEL	Organ/Effect	Comments	Reference
oral (diet)	1 year	beagle	0.056 mg/kg/day	0.262 mg/kg/day	Plasma and erythrocyte cholinesterase inhibition	Brain cholinesterase inhibited at 1.228 mg/kg/day.	EPA 1998
oral (diet)	2 years	mouse	0.014 mg/kg/day	0.71 mg/kg/day	Erythrocyte cholinesterase inhibition	Plasma cholinesterase inhibited at 0.014 mg/kg/day, but EPA considered the dose a threshold dose for cholinesterase inhibition. No carcinogenicity seen in this study.	EPA 1998
oral (drinking water)	5 generations	mouse		60 ppm	Statistically significant increase in mortality in some litters	No histopathologic change in liver or kidney. Slight increase in time from pairing to delivery of young.	Worthing 1983
oral	1 year	dog	50 mg/kg		No weight loss	No weight loss or decreased food consumption.	Worthing 1983
Developmental/Reproductive Toxicity							
oral (gavage)	gestation days 6–16	rat		1 mg/kg/day	Plasma, erythrocyte and brain cholinesterase inhibition		EPA 1998
oral (gavage)	gestation days 6–16	rat	4.2 mg/kg/day	18 mg/kg/day	Maternal and developmental toxicity	Clinical signs included tremors, lacrimation, exophthalmos, hypoactivity, urine-stained ventral surface, and salivation, and decreased body weight gain. Rate of resorptions and inhibition of fetal brain cholinesterase also increased slightly	EPA 1998
oral (gavage)	gestation days 6–18	rabbit	1.0 mg/kg/day	2.75 mg/kg/day	Brain cholinesterase inhibition	Maternal toxicity.	EPA 1998
oral (gavage)	gestation days 6–18	rabbit	2.75 mg/kg/day	7.5 mg/kg/day	Increased resorptions and unossified metacarpals.	Development and reproduction toxicity	EPA 1998
oral (diet)	2 generations	rat	0.1 mg/kg/day	0.7 mg/kg/day	Cytoplasmic vacuolation of the epithelial ductal cells of the epididymis and inhibition of plasma and erythrocyte cholinesterase.	At the high dose of 5 mg/kg/day, epididymal weight decreased, fertility decreased, maternal weight during pre-mating increased, weight gain during gestation decreased, pup weight gain decreased during lactation, and brain cholinesterase was inhibited.	EPA 1998