3. CHEMICAL AND PHYSICAL INFORMATION

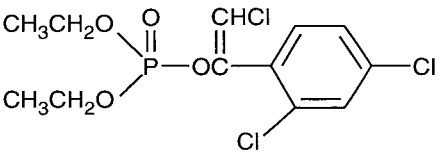
3.1 CHEMICAL IDENTITY

Chlorfenvinphos is a synthetic organophosphorus insecticide that has been used as a soil or foliar insecticide. It was also used to control insect pests on livestock and to control household pests. Information regarding the chemical identity of chlorfenvinphos is located in Table 3-1.

3.2 PHYSICAL AND CHEMICAL PROPERTIES

Chlorfenvinphos is a vinyl organophosphate insecticide. The technical material is an amber liquid with a mild odor containing about 80–90% chlorfenvinphos (trans and cis isomers with a typical ratio of 8.5:1). It is sparingly soluble in water, but miscible with most organic solvents. It hydrolyzes slowly in water, but is unstable in alkali (Worthing 1983). Information regarding the physical and chemical properties of chlorfenvinphos is located in Table 3-2.

Table 3-1. Chemical Identity of Chlorfenvinphos

Characteristic	Information	Reference
Chemical name	2-chloro-1-(2,4-dichlorophenyl) vinyl diethyl phosphate	Worthing 1983
Synonym(s)	Phosphoric acid 2-chloro-1-(2,4-dichlorophenyl)ethenyl diethyl ester; O,O-diethyl O-[2-chloro-1-(2,4-dichlorophenyl)vinyl] phosphate; 2,4-dichloro-α-(chloromethylene)benzyl alcohol diethyl phosphate	Merck 1989
Registered trade name(s)	CVP; SD 7859; Compound 4072; Birlane; Dermaton; Sapecron; Steladone; Supona	Merck 1989
Chemical formula	$C_{12}H_{14}Cl_3O_4P$	Worthing 1983
Chemical structure		Worthing 1983
Identification numbers:		
CAS Registry	470–90–6	Merck 1989
NIOSH RTECS	TB 8750000	HSDB 1996
EPA Hazardous Waste	No data	
OHM/TADS	810041	HSDB 1996
DOT/UN/NA/IMCO	UN 2783 Organophosphorus pesticide	HSDB 1996
HSDB	1540	HSDB 1996
NCI	No data	

CAS = Chemical Abstracts Services; DOT/UN/NA/IMCO = Department of Transportation/United Nations/North America/International Maritime Dangerous Goods Code; EPA = Environmental Protection Agency; HSDB = Hazardous Substances Data Bank; NCI = National Cancer Institute; NIOSH = National Institute for Occupational Safety and Health; OHM/TADS = Oil and Hazardous Materials/Technical Assistance Data System; RTECS = Registry of Toxic Effects of Chemical Substances

Table 3-2. Physical and Chemical Properties of Chlorfenvinphos

Property	Information	Reference
Molecular weight	359.56	Merck 1989
Color	Amber liquid (Technical) Colorless liquid	Merck 1989 Hartley 1987
Physical state	Liquid	Merck 1989
Melting point	–19 to –23 °C (Technical) –16 to –22 °C	Worthing 1987 Ouellette 1977
Boiling point at 0.01 mm Boiling point at 0.5 mm	120 °C (Technical) 167–170 °C (Technical)	Merck 1989 Merck 1989
Density at 25 °C	1.5272 g/mL	Merck 1989
Odor	Mild odor	Merck 1989
Odor threshold: Water Air	 No data No data	
Solubility: Water at 23 °C	 145 ppm	 Merck 1989
Organic solvent(s)	Miscible with acetone, ethanol, propylene glycol, dichloro-methane, hexane, xylene	Merck 1989; Worthing 1983
Partition coefficients: Log K_{ow} Log K_{oc}	 3.806 2.45	 Bowman and Sans 1983 Kenaga 1980
Vapor pressure at 25 °C	$4x10^{-6}$ mm Hg $7.5x10^{-6}$ mm Hg $1.7x10^{-7}$ mm Hg	Worthing 1983 Merck 1989 Verschueren 1983
Henry's law constant: at 25 °C	$1.53x10^{-8}$ atm-m^3/mol $2.76x10^{-9}$ atm-m^3/mol	HSDB 1996 Domine et al. 1992
Autoignition temperature	No data	
Flashpoint	No data	
Flammability limits at 25 °C	No data	
Conversion factors (25 °C)	1 ppm = 14.7 mg/m^3 1 mg/m^3 = 0.068 ppm	
Explosive limits	No data	