Appendix B. Supplemental Environmental Fate Information

Contents

1. Table Listing Review Results of all Environmental Fate Data

Table B 1. Summary of Reviews of All Submitted Environmental Fate Studies

Parameter	Value	Source / Study Classification	Comments
Abiotic Hydrolysis[3] (days)	Half-life, nonlinear regression[1] at 23-25°C: Parent only, 13 (pH 5) 139 (pH 7) 77 (pH 9) Parent+unidentified residue: 13 (pH 5) 317 (pH 7) 114 (pH 9)	MRID 40931101/ Acceptable DER 02/8/2008 DER amendment 02/29/2012	There was an unidentified peak (in HPLC analysis) that was increasing at the end of the study. Half-lives were calculated assuming that the peak was a residue of concern, as well as for the parent only.
	Half-life, linear regression[1] at 20°C: Diazinon: 0.49 days, pH 3.1 31 days, pH 5 185 days, pH 7.4 136 days, pH 9.0 Diazoxon: 0.016, pH 3.1 1.3, pH 5.0 29, pH 7.4 18, pH 9 0.42, pH 10.4	MRID 132726/ Supplemental-not for use in modeling DER 03/12/2008	No mass balance. Only one replicate, no signed good laboratory practices (GLP) statement, no sterility check. This study included analysis of diazoxon. Maintained under light. Diazoxon values could be used qualitatively to better understand its hydrolysis as it compares to diazinon.
		MRID 48417201/ under review	
		MRID 103934/ not formally classified	Measured hydrolysis rate at 48-50°C. No raw data.
		MRID 118021/ Supplemental DER 03/28/1988	Sterility not maintained. Purity not specified. Conducted on formulation. Material balance not provided. Formulated product used in study.

Parameter	Value	Source / Study Classification	Comments
		MRID 118027 and 00120419/ Unacceptable DER no date	Sterility and darkness not maintained.
		MRID 120421/ unacceptable DER 03/28/1988	Analytical method based on fly mortality. Material balance not provided.
		MRID 132724/ not formally classified	Would be unacceptable because test substance was not characterized (Dynamac Corporation, 1984).
		MRID 132725/ not formally classified	Would be unacceptable because test substance was not characterized (Dynamac Corporation, 1984).
		MRID 132726/ not formally classified	Indicated hydrolysis rates of diazinon and diazoxon were a function of pH and temperature. Sampling procedures not described. Raw data not reported. Conducted in diffuse light. (Dynamac Corporation, 1984)
Atmospheric Degradation (days)	Half-life: 0.111(estimated)	(USEPA, 2009)/ NA	Estimated Using EPIWeb Version 4.1
Aqueous Photolysis Half-life (days)		MRID 48417202/ under review	
		MRID 40863401/ Invalid 03/03/2008	TLC methodology was not adequate to accurately quantify diazinon and oxypyrimidine. Temperature range12-49^{o}C. Oxypyramidine was only major degrdate. Material balance was low (82%).
		MRID 132728/ not formally classified	Only one replicate. Inadequate description of procedures. IMHP was a major degradate and there was one major unidentified degradate.(Dynamac Corporation, 1984)
		MRID 153231/ unacceptable DER 03/28/1988	Sunlight conditions were not simulated with a mercury vapor lamp.
		MRID 40519801/ unacceptable DER 02/27/2008	Methodology was inadequate to separate different compounds.

Parameter	Value	Source / Study Classification	Comments
Soil Photolysis Half-life[4]	Does undergo photolysis in soil.	MRID 153229/ Supplemental-not for use in modeling DER 03/28/1988 amended 02/15/2008	Temperature range 16-31°C for natural sunlight, and 25°C for dark controls. Up to 30% bound residues. Half-life in natural sunlight was 17.3 hours (not corrected for dark control). Half-life in the dark control was 14.7 days.
	Does undergo photolysis in soil.	MRID 153230/ Supplemental-not for use in modeling DER 03/28/1988 amended 03/03/2008 Amended 02/29/2012	Temperatures not reported for natural sunlight. Intensity of sunlight not reported.
		MRID 146733/ not formally classified	Wavelength distribution not provided. 1 sampling interval and replicate. IMHP was a major degradate.Diazinon was not stable. (Dynamac Corporation, 1984)
		132730/ not formally classified	Procedures not fully described (Dynamac Corporation, 1984)
		118037/ not formally classified	Procedures not fully described. (Dynamac Corporation, 1984)
Aerobic Soil Metabolism Half-life (days)	Half-life, nonlinear regression[1] at 20°C: Parent Only: 5.5, Les Evouettes silt loam	MRID 46867004/ supplemental DER 05/05/2011	Swiss soil used in study and it could not be determined whether the soils were comparable to U.S. Soils. One replicate. Half-life with low moisture (30% field capacity) was 10.10 days. Half-life with low temperature (10°C) was 13.84 days. Half-life with a low application rate was 5.51 days.
	Half-life, linear regression[1] at 20°C: 39 days, sandy loam	MRID 44746001/ Supplemental DER no date	There was an unexplained loss of approximately 25% of applied radioactivity at all sampling intervals after 181 days. There were no sampling intervals between 30 and 90 days.
	Half-life, method not specified at 25°C: Parent Only: 11, sandy loam, Switzerland	MRID 118031/ supplemental- not for quantitative use in risk assessment DER 03/28/1988	Raw data were missing. IMHP was major degradate. Only one replicate. Purity not specified. Switzerland soil. Dropped from 100 to 12% between the first and second data point. Inadequate points to fully describe decline curve. Recovery of radioactivity dropped to 74, 81, and 82% at 3 points. Maximum unextracted residue was 15.1% at final sampling interval and occurred well after most of the parent was degraded.

Parameter	Value	Source / Study Classification	Comments
		MRID 46407102/ not acceptable DER 05/05/2011	Biotransformation of oxypyrimidine degradate. Material balance was not complete. Single samples were collected.
		MRID 46386605/ not acceptable DER 05/05/2011	Material balance was incomplete, nonextractable residues were not determined, study. Only single samples were collected.
		MRID 118021/ supplemental DER 03/28/1988	Sterility not maintained. Purity not specified (san document 2055645). Degradates not identified and soil moisture content was not maintained at 75% of 1/3 bar.
		MRID 118025/ supplemental DER 03/28/1988	Degradates were not identified, soil moisture not maintained, up to 72% of radioactivity was unaccounted for.
		MRID 118035 and 132739/ not formally classified	No material balance. Degradates not identified. MRID 118035 and 132739 are the same submission submitted under different MRID numbers.
		MRID 120421/ unacceptable DER 03/28/1988	Method not described in sufficient detail, material balance not provided.
		MRID 118037/ not classified	Material balance not provided (Dynamac Corporation, 1984)
		MRID 118038/ not formally classified	Procedures not fully described (Dynamac Corporation, 1984)
		MRID 132738/ not formally classified	Procedures not fully described. (Dynamac Corporation, 1984)
		MRID 132729/ not formally classified	Material balance not provided. Extraction efficiency not reported. German soil. Procedures not fully described. (Dynamac Corporation, 1984)
		MRID 132739/ not classified	No material balance. No raw data (Dynamac Corporation, 1984).
		MRID 73059/ supplemental DER not dated	Material balance not provided, purity unspecified, patterns of formation and decline not addressed.
		MRID 95199/ unacceptable DER 03/28/1988	Identification of radioactivity was not chemical specifc.
		MRID 40028701/not acceptable DER 02/20/2008	Material balance highly variable. Major degradate was oxypyrimidine. Up to 36.2% unextracted residues. Soil amended with glucose which could alter the rate of degradation.

Parameter	Value	Source / Study Classification	Comments
Aerobic Aquatic Metabolism Half-life (days)	Half-life, nonlinear regression[1] at 20°C (25°C): 9.9 (7.0), pond water-clay loam sediment 11.6 (8.2), Lake water, sandy loam sediment	MRID 46386604/ acceptable DER 05/5/2011	Water and sediment collected from sites in UK. Up to 49% unextracted residues in pond-clay loam sediment system and 23% in lake-sandy loam system. The unextracted residues did not begin to increase substantially until most diazinon degraded. Unextracted residues are unlikely to be the parent.
		118037/ not classified	Not usable in risk assessment. No material balance (Dynamac Corporation, 1984).
Anaerobic Soil Metabolism Half-life (days)		MRID 40028701/not acceptable DER02/20/2008	Material balance highly variable. Major degradate was oxypyrimidine. Up to 36.2% unextracted residues. Soil amended with glucose which could alter the rate of degradation.
		44746001/ supplemental DER no date	The anaerobic flasked were dosed with glucose which may have altered the rate of degradation.
Anaerobic Aquatic Metabolism Half-life (days)	Half-life, nonlinear regression[1] at 20°C (25°C): Parent Only: 24.5 (17.3), sandy loam soil, UK	MRID 46386602/ Acceptable DER 05/5/2011	Conducted on soil instead of sediment. Aerobic aquatic studies should be conducted using a sediment to simulate microbes and aquatic systems. Single samples. Total system half-life is reported.
		MRID 40101501/ not acceptable DER 03/28/1988 amended 03/18/2008	Sediment from cranberry bog. Average mass balance ranged from 83 – 107%.
		MRID 118022/ invalid Dynamac DER summary 07/22/1986	Analytical method not described, test substance was not technical grade, Kd values not reported and columns not leached with sufficient water.
		MRID 118023/ supplemental DER 03/28/1988	Used formulated product, temperature not specified. Kd values not reported.
Solid-water distribution coefficient (K_d) in L/kg		MRID 118032/ acceptable DER no date Invalid/ DER amendment 02/29/2012	Only radioactivity measured. Identity of residues were not reported.
		MRID 132731/ not formally classified	Insufficient information on procedures (Dynamac Corporation, 1984).

Parameter	Value	Source / Study Classification	Comments
		MRID 120420/ 132733/ 146735/ not formally classified	MRIDs120420, 132733, and 146735 are the same. Insufficient information available on procedures to evaluate study (Dynamac Corporation, 1984).
		MRID 44746002/ unacceptable DER no date	Soils were autoclaved prior to study.
		MRID 42680901/ acceptable DER 03/04/2008	Diazinon and oxypyrimidine were observed in leachate.
	Average K_d at 20-22^{o}C Oxypyramidine 0.159, sandy loam, pH NR 0.1421, sand, pH NR 0.187, clay loam, pH NR Mean = 2.60 (standard deviation=1.72)	MRID 46407101/ 46407103 supplemental DER 05/05/2011	Material balances not provided at all concentrations. Coefficient of variation is 14%.
		MRID 46579601/ not reviewed	Diazoxon sorption
Leaching	Maximum Percent leached: Parent: 2.84, MD sand, pH 6.8, OC 0.9% 0.71, CA sandy loam, pH 6.5, OC 0.5% 0.19, MS silt loam, pH 5.9, OC 4.8% 0.50, MD clay, pH 7.5, OC 1.0% Oxypyrimidine: 71.82, MD sand, pH 6.8, OC 0.9% 15.54, CA sandy loam, pH 6.5, OC 0.5% 5.47, MS silt loam, pH 5.9, OC 4.8% 14.68, MD clay, pH 7.5, OC 1.0%	MRID 40512601/ acceptable DER no date	Residues of diazinon observed in leachate of a 30 cm column, 50.7 cm of water.
	Greater than 75% of ^{14}C material was found in leachate with most present as oxypyrimidine.	MRID 132734/ 132735 supplemental DER 03/28/1988	132734 and 132735 are identical submissions. Foreign soils. Only 20.3 cm of water rather than required 50 cm was used in study. It is likely to underestimate leaching amounts.

Parameter	Value	Source / Study Classification	Comments
		118022/ unacceptable DER 03/28/1988	Analytical method not described. Leached with insufficient amount of water.
		MRID 118023/ supplemental DER 03/28/1988	Test material was formulated product.
		MRID 118032/ supplemental DER not dated	Stability data on diazinon is missing. Purity of standard not provided. Foreign soils.
		MRID 118033/ not formally classified	Analytical method not described. Volume of leaching solution not adequate. Test substance was formulated product.
	96.1 and 89.4% of applied radioactivity leached in a sandy soil and silty loam foreign soils. The major components in leachate were an unidientified degradate and oxypyrimidine.	118034/ supplemental DER 03/28/1988	Residues aged in soils for 30 days prior to leaching experiment.
		MRID 120420/ Environmental Fate Summary not signed or dated	Less than 5% of applied found in leachate. Water volume was only 20 cm, 20 inches was recommended.
		MRID 122690/ unacceptable DER 03/28/1988	Column subirrigated. MRID 39346, 40364, 11825, 53135, 120421, 85856 are duplicates of 122690.
		53135/ unacceptable DER 03/28/1988	Not technical grade, not leached with enough water.
		MRID 40350/ 92604/ unacceptable DER 03/28/1988	MRID 40350 and 92604 are the same. Analytical method not described.
		MRID 92960/ unacceptable DER 03/28/1988	Bioassay was not specific to chemical.
		MRID 95199/ unacceptable DER 03/28/1988	Nonspecific bioassay used to detect residues.
		MRID 95476/ not formally classified	Experimental conditions were inadequately described. Degradates not identified. (Dynamac Corporation, 1984)
		MRID 132732/ not reviewed	Not enough information to review.

Parameter	Value	Source / Study Classification	Comments
		MRID 40372 not reviewed	Leaching and runoff study
Terrestrial Field Dissipation Half-life (days)	Half-life, linear regression[1]: 9 days, CA, loamy sand, corn	MRID 41320101/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Samples were stored for up to 190 days prior to analysis. Accumulated with repeated applications.
	Half-life, linear regression[1]: 7 days, CA, loamy sand, bare plot	MRID 41320102/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Samples were stored up to 190 days. More information needed on diazoxon. Diazinon reached 6 inches and oxypyramidine was found up to 24 inches. GS31144 was detected up to 6 inches. LOQ 0.01-0.02 mg/kg-soil dw. Value calculated by registrant.
	Half-life, linear regression[1]: 5.51 days, FL, sandy soil, citrus	MRID 41320103/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 20 days, CA, loamy sand, bareground	MRID 41320104/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 7 days, CA, loamy sand, orange	MRID 41320105/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported. Accumulated with repeated applications.
	Half-life, linear regression[1]: 5 days, IL, sand, corn	MRID 41432701/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 6 days, IL, sand, bare ground	MRID 41432702/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 10 days, CA, sandy loam, apples	MRID 41432703/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 6 days, CA, sandy loam, bare ground	MRID 41432704/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 8.23 days, FL, sandy, bare ground	MRID 41432705/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage not reported.
	Half-life, linear regression[1]: 5.3 days, NY, sandy loam, bare ground	MRID 41432706/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage was up to 9 mos.

Parameter	Value	Source / Study Classification	Comments
	Half-life, linear regression[1]: 17 days, NY, sandy loam, apples	MRID 41432707/ supplemental DER 04/20/1999	Diazoxon not stable during sample storage for 30 days. Duration of sample storage was up to 9 mos. Did not accumulate with successive applications except with one treatment.
		MRID 46867006/ supplemental DER 02/29/2012	Study demonstrates presence of diazoxon in plant material. Plant concentrations reported on a wet weight basis. Storage stability study not conducted for grass and thatch. Background concentrations of diazinon were present. LOQ 0.005 ppm. Diazoxon reached a maximum of 0.64 ppm in grass/thatch on a wet weight basis.
		MRID 46867005	Storage stability study of diazinon
		MRID 46867003	
		MRID 52086/ not formally reviewed	Identity of residues unknown. (Dynamac Corporation, 1984)
		MRID 90869/ not reviewed	No raw data. Four page study summary.
		MRID 118019/ not reviewed	Field study on treatment of ant mounds.
	Greater than 50% lost in between 0 and 7 days in CA loam, WA sandy loam, PA silty clay loam, and TX loam.	MRID 118024/ supplemental DER 03/28/1988	Test substance not characterized, patterns of formation and decline of degradates not addressed.
		MRID 118025/ supplemental DER 03/28/1988	Purity of test substance not specified, degradates were not identified, material balance was insufficient.
		MRID 120421/ Invalid Dynamac DER summary 07/22/1986	Sampling interval (one sample) was inadequate, and method not described in sufficient detail.
		MRID 130997/ not classified	No replicates. Degradates not identified. Results highly variable. (Dynamac Corporation, 1984)
		MRID 130999/ not reviewed	Turf study. Reported on wet weight basis.
		MRID 131005/ not reviewed	Turf study.
		MRID 131013/ not classified	Data only presented in graph form. Residues determined on a wet weight basis.

Parameter	Value	Source / Study Classification	Comments
		MRID 132736/ not classified	Diazinon was applied to turf at 6-18.6 lbs a.i./A. Grass, thatch, and soil were collected from treated and control plots. Maximum concentrations of diazinon were 1043, 1113, and 19 mg/kg in grass, thatch, and soil respectively. Results were highly variable. No consistent patterns of decline.(Dynamac Corporation, 1984)
		MRID 132737 not reviewed	Turf study. Only followed diazinon. Inadequate information to follow study design.
		MRID 103643/ unacceptable DER 03/28/1988	Analytical method not described and sampling intervals inadequate to assess dissipation. Degradates not characterized.
		MRID 45476/ not classified	Experimental conditions inadequately described. Diazinon was applied at 4 kg a.i./ha to a golf course fairway followed by irrigation. Soil samples (0-2.5 cm) were collected over time (Dynamac Corporation, 1984).
		MRID 131013/ not classified	Data only provided in graphical form and residues determined on wet weight basis (Dynamac Corporation, 1984).
		MRID 90868/ not formally classified	Analytical method could not identify residues. No quantitative conclusions could be made (Dynamac Corporation, 1984).
		MRID 120423/ not classified	No quantitative conclusions can be made. Soil samples were not labeled for field plot.
		MRID 132741/ not classified	Sampling protocol inadequate to establish a decline curve. (Dynamac Corporation, 1984)
		MRID 154041/ not reviewed	Examined effects of adding detergents to diazinon persistence. Open literature study.
		MRID 46479601 Not reviewed	
Field Volatilization Study		MRID 46407002/ invalid DER 01/31/2008	No measurement of radioactivity in air. No material balance. Test duration of 24 hours was insufficient.
		MRID 46407003/ supplemental DER 01/31/2008	Demonstrates that diazinon volatilizes from soil in laboratory conditions. No raw data provided. No material balance. It was not clear what some abbreviations in analytical method results referred to.

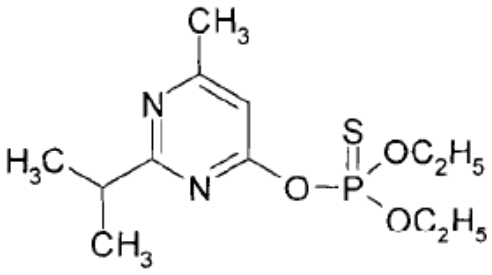
Parameter	Value	Source / Study Classification	Comments
		MRID 118040/ supplemental DER 01/31/2008	Open literature report that did not provide raw data and insufficient information was provided on the study to use the results to predict volatilization of diazinon from soil.
		MRID 90826/ supplemental DER 01/31/2008	Demonstrates the diazinon does volatilize from soil and other media, including water, under laboratory conditions. Test duration was insufficient. No statement of GLP. Raw data were not included. No details on the analysis of identification of residues.
		MRID 48515501/ not reviewed	
Bioconcentration Factor		MRID 40660808/ 41194401 Supplemental 03/06/2012	Identity of residues were not characterized. Residues measured in fish after 29 days were identified in 41194401. BCFs cannot be calculated without knowledge of the identity of residues over the duration of the study in fish and water. The study does show that diazinon,oxypyrimidine, and GS-31144 are residues likely to be observed in fish tissue in fish exposed to diazinon and/or its metabolites in water.
		MRID 40879901 Not reviewed	
Pond studies	Maximum residue in pond adjacent to orchard treated with diazinon was 113.0 µg/L and maximum mean residues were 53.4 µg/L (5 April – 31 October). No quantifiable residues observed in sediment.	MRID 41490401/ supplemental DER 10/10/1991	Applied diazinon to an apple orchard and measured residues in adjacent pond.
	Maximum residues measured in pond were 82.1µg/L.	MRID 41490402/ supplemental DER 10/10/1991	Diazinon applied to orchard and residues measured in adjacent pond.
	Maximum residues in pond adjacent to site treated with diazinon was 12.8 µg/L.	MRID 41490403/ supplemental DER 10/10/1991	Applied diazinon to an apple orchard and measured residues in adjacent pond.
Drift Studies		MRID 40931103/ 41141502/ Acceptable DER 7/31/1991	Deposition 100 feet downwind ranged from 0.26 to 13.3% of applied for airblast/mist blower application.
		MRID 4093111/ 41141501/ Acceptable DER 06/25/1991	DSD study for mist blower.
		MRID 41687702/ upgradeable DER 06/14/1993	

Parameter	Value	Source / Study Classification	Comments
		MRID 41687703/ upgradeable DER 06/14/1993	
		MRID 27142/ unacceptable DER 03/28/1988	Lack of sufficient experimental information such as rainfall, purity, and soil characteristics.
Drinking Water and Monitoring		MRID 45526202	Chlorine degradation of OP Insecticides and Oxons in Drinking Water Matrix
		BEAD Study completed May 11, 2006 from Jim Hetrick	
		MRID 45513501	Drinking Water Monitoring Study of Six OP Insecticides and Their Major Oxon Degradation Products from 44 CWS on Surface Water in the United States Diazinon Oxon Results.
		MRID 45526201	Drinking Water Monitoring Study for Six Organophosphate Insecticides and Four Oxons from 44 CWS on Surface Water in the United States
Mushroom Compost		MRID 66159	

1 Degradation kinetics were calculated using the single first order decay equation using either nonlinear regression of non-transformed data or linear regression of natural log transformed data.

2. Information on the Identity of Degradates and Maximum Amounts Observed in Fate Studies

Table B 2. Structure and Identity Information for Diazinon and Its Degradates

Chemical Name	Structure	
Diazinon, G-24480 Molecular Weight: 304.10 CAS: Unknown SMILES Code: O(P(OCC)(Oc(nc(nc1C)C(C)C)c1)=S)CC		

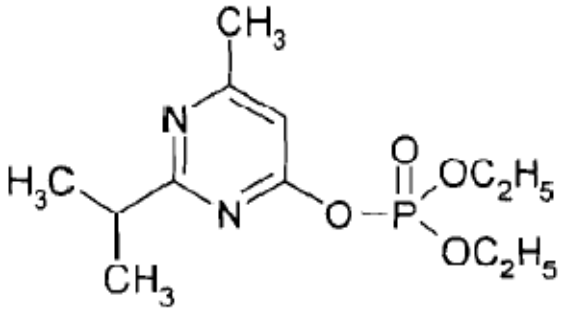
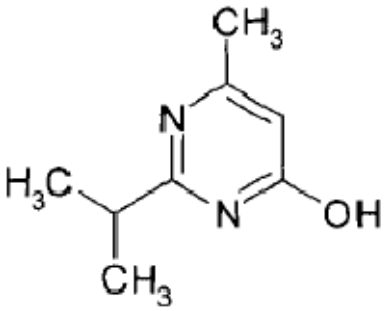
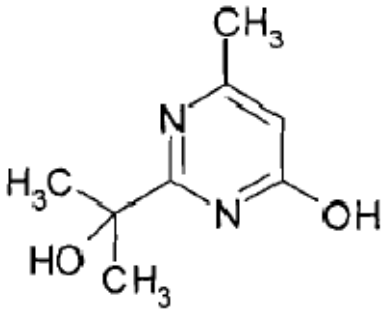
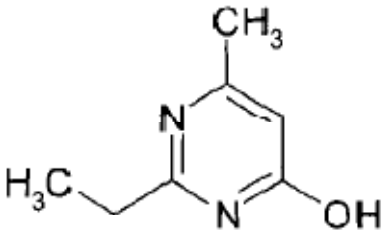
Diazoxon, Diazinon oxon, Diethyl 2-isopropyl-6-methyl-4-pyrimidinyl phosphate, G24576 CAS: 962-58-3 Molecular Weight: 288.12		
Names: Oxypyrimidine, IMHP, G-27550, 2-isopropyl-4-methyl-6-hydroxypyrimidine CAS: SMILES: Nl=C(C(C)C)N=C(O)C=C1C Molecular Weight=152.20		Log K_{OW} =0.7 K_{OC}=5.7 Aerobic soil DT50=126 (AERU, 2009)
Names: GS-3114 2-(1-Hydroxy-I-methylethyl)-6-methyl-4(1H)-pyrimidinone CAS: Molecular Weight: 168.09 SMILES: O=C/1/N=C(\N\C(=C\1)C)C(O)(C)C		
Demethyl G27550, 2-Ethyl-6-methyl-4(1H)-pyrimidinone Molecular Weight: 138.08		

Table B 3. Summary of maximum amount of transformation products observed in fate studies

Transformation Product	Study Type	MRID	Maximum %AR (day)	Final %AR (study length)
Diazinon	Hydrolysis	40931101		29.9 (21 days, pH 5) 75.9 (32 days, pH 7) 69.0 (32 days, pH 9)
	Aqueous photolysis	40863401		30.77 (360 hours)
	Soil Photolysis	153229		28.7 natural light (240 hours) 63.9 artificial light (240 hours)
	Soil photolysis	153230		37.64 (35.5 days)
	Aerobic Soil	44746001		0.1 (366 days)
	Aerobic Soil	40028701		0.2 (371 days)
	Aerobic Soil	46867004		1.3 (119 days)
	Aerobic Aquatic	46386604		1.4 pond-clay loam (100 days) 3.0 lake-sandy loam (100 days)
	Anaerobic Soil	44746001		3.6 (60 days)
	Anaerobic Soil	40028701		18.0 (31 days)
	Anaerobic Aquatic	40101501		0.4 (87 days)
	Anaerobic Aquatic	46386602		18.0 (59 days)
	Terrestrial Field Dissipation	41320101	3.4 mg/kg (21 days)	<0.02 mg/kg-dw (270 days)
	Terrestrial Field Dissipation	41320102	3.5 mg/kg (1 days)	<0.02 mg/kg-dw (365 days)
	Terrestrial Field Dissipation	41320103	1.022 mg/kg (0 days)	<0.01 mg/kg (92 days)
	Terrestrial Field Dissipation	41320104	3.29 mg/kg (0 days)	<0.01 mg/kg (275 days)
	Terrestrial Field Dissipation	41320105	2.82 mg/kg (0 days)	<0.01 mg/kg (247 days)
	Terrestrial Field Dissipation	41432701	2.2 mg/kg (22 days)	<0.02 mg/kg (458 days)
	Terrestrial Field Dissipation	41432702	2.6 mg/kg (0 days)	<0.02 mg/kg (458 days)
	Terrestrial Field Dissipation	41432703	1.538 mg/kg (-56 days)	<0.01 mg/kg (359 days)
	Terrestrial Field Dissipation	41432704	2.313 mg/kg (0 days)	<0.01 mg/kg (362 days)
	Terrestrial Field Dissipation	41432705	1.334mg/kg (0 days)	<0.01 mg/kg (269 days)
	Terrestrial Field Dissipation	41432706	6.36 mg/kg (0 days)	<0.01 mg/kg (364 days)
	Terrestrial Field Dissipation	41432707	1.93 mg/kg (0 days)	<0.01 mg/kg (364 days)

Transformation Product	Study Type	MRID	Maximum %AR (day)	Final %AR (study length)
Oxypyramidine	Hydrolysis	40931101	68.2 (21 days, pH 5) 7.0 (32 days, pH 7) 18.8 (32 days, pH 9)	68.2 (21 days, pH 5) 7.0 (32 days, pH 7) 18.8 (32 days, pH 9)
	Aqueous photolysis	40863401	38.84 (360 hours)	38.84 (360 hours)
	Aqueous Photolysis	132728/ not reviewed	41 (97 hours)	41 (97 hours)
	Soil Photolysis	153229	24.4 natural light (32.6 hours) 17.5 artificial light (216 hours)	24.4 natural light (32.6 hours) 16.4 artificial light (240 hours)
	Soil photolysis	153230	21.50 (13.5 hours)	11.02 (35.5 days)
	Aerobic soil	118031/ supplemental	72.9 (14 days)	4.7 (166 days)
	Aerobic Soil	44746001	41.9 (90 days)	0.5% (366 days)
	Aerobic Soil	40028701	67.0 (95 days)	12.5 (371 days)
	Aerobic Soil	46867004	81.8 (21 days)	0.8 (119 days)
	Aerobic Aquatic	46386604	37.6 pond-clay loam (30 days) 69.7 lake-sandy loam (30 days)	18.2 pond-clay loam (100days) 55.8 lake-sandy loam (100 days)
	Anaerobic Soil	44746001	71.5 (60 days)	71.5 (60 days)
	Anaerobic Soil	40028701	21.2 (0 days)	12.7 (31 days)
	Anaerobic Aquatic	40101501	66.3 (87 days)	55.6 (366 days)
	Anaerobic Aquatic	46386602	47.2 (59 days)	47.2 (59 days)
	Terrestrial Field Dissipation	41320101	0.72 mg/kg (35 days)	<0.01 mg/kg-dw (270 days)
	Terrestrial Field Dissipation	41320102	0.28 mg/kg (14 days)	<0.01 mg/kg-dw (365 days)
	Terrestrial Field Dissipation	41320103	0.502 mg/kg (-7 days)	<0.01 mg/kg (92 days)
	Terrestrial Field Dissipation	41320104	0.39 mg/kg (6 days)	<0.02 mg/kg (275 days)
	Terrestrial Field Dissipation	41320105	1.45 mg/kg (3 days)	<0.02 mg/kg (247 days)
	Terrestrial Field Dissipation	41432701	0.32 mg/kg (22 days)	<0.02 mg/kg (458 days)
	Terrestrial Field Dissipation	41432702	0.26 mg/kg (1 days)	<0.01 mg/kg (458 days)
	Terrestrial Field Dissipation	41432703	1.267 mg/kg (-56 days)	<0.01 mg/kg (362 days)
	Terrestrial Field Dissipation	41432704	2.029 mg/kg (14 days)	<0.01 mg/kg (362 days)
	Terrestrial Field Dissipation	41432705	0.210 mg/kg (7 days)	<0.01 mg/kg (269 days)
	Terrestrial Field Dissipation	41432706	3.26 mg/kg (3 days)	<0.02 mg/kg (364 days)

Transformation Product	Study Type	MRID	Maximum %AR (day)	Final %AR (study length)
	Terrestrial Field Dissipation	41432707	0.79 mg/kg (7 days)	<0.02 mg/kg (364 days)
Diazoxon	Soil Photolysis	153229	NR	NR
	Soil photolysis	153230	NR	NR
	Aerobic Soil	44746001	NR	NR
	Aerobic Soil	40028701	NR	NR
	Aerobic Soil	46867004	NR	NR
	Anaerobic Soil	40028701	NR	NR
	Anaerobic Aquatic	46386602	ND	ND
	Aerobic Aquatic	46386604	ND	ND
	Terrestrial Field Dissipation	41320101	ND	ND
	Terrestrial Field Dissipation	41320102	ND	ND
	Terrestrial Field Dissipation	41320103	0.015 mg/kg (-7 days)	<0.01 mg/kg (92 days)
	Terrestrial Field Dissipation	41320104	ND	ND
	Terrestrial Field Dissipation	41320105	ND	ND
	Terrestrial Field Dissipation	41432701	ND	ND
	Terrestrial Field Dissipation	41432702	ND	ND
	Terrestrial Field Dissipation	41432703	0.016 mg/kg (1 days)	<0.01 mg/kg (359 days)
	Terrestrial Field Dissipation	41432704	0.012 mg/kg (60 days)	<0.01 mg/kg (362 days)
	Terrestrial Field Dissipation	41432705	0.014 mg/kg (0 days)	<0.01 mg/kg (269 days)
	Terrestrial Field Dissipation	41432706	ND	ND
	Terrestrial Field Dissipation	41432707	ND	ND

Transformation Product	Study Type	MRID	Maximum %AR (day)	Final %AR (study length)
GS-3114	Soil Photolysis	153229	3.6, natural light (32.6 hours) ND artificial light	3.6 natural light (32.6 hours) ND, artificial light
	Soil photolysis	153230	NR	NR
	Aerobic Soil	44746001	<1	<1
	Aerobic Soil	40028701	12.8 (195 days)	6.1 (371 days)
	Aerobic Soil	46867004	3.0 (35 days)	ND (119 days)
	Aerobic Aquatic	46386604	ND	ND
	Anaerobic Soil	40028701	0.1 (31 days)	0.1 (31 days)
	Anaerobic Aquatic	40101501	None	None
	Anaerobic Aquatic	46386602	1.8 (59 days)	1.8 (59 days)
	Terrestrial Field Dissipation	41320101	0.043 mg/kg (35 days)	<0.01 mg/kg (270 days)
	Terrestrial Field Dissipation	41320102	0.027 mg/kg (28 days)	<0.01 mg/kg-dw (365 days)
	Terrestrial Field Dissipation	41320103	0.048 mg/kg (-7 days)	<0.02 mg/kg (92 days)
	Terrestrial Field Dissipation	41320104	<0.02 mg/kg (6 days)	<0.02 mg/kg (275 days)
	Terrestrial Field Dissipation	41320105	0.04 mg/kg (3 days)	<0.02 mg/kg (247 days)
	Terrestrial Field Dissipation	41432701	0.021 mg/kg (28 days)	<0.01 mg/kg (458 days)
	Terrestrial Field Dissipation	41432702	0.01 mg/kg (7 days)	<0.01 mg/kg (458 days)
	Terrestrial Field Dissipation	41432703	0.178 mg/kg (30 days)	<0.02 mg/kg (359 days)
	Terrestrial Field Dissipation	41432704	0.0128 mg/kg (30 days)	<0.01 mg/kg (362 days)
	Terrestrial Field Dissipation	41432705	ND	ND
	Terrestrial Field Dissipation	41432706	0.13 mg/kg (7 days)	<0.02 mg/kg (364 days)
	Terrestrial Field Dissipation	41432707	0.09 mg/kg (7 days)	<0.02 mg/kg (364 days)
Demethyl G27550	Soil Photolysis	153229	NR	NR
	Soil photolysis	153230	NR	NR
	Aerobic Soil	44746001	NR	NR
	Aerobic Soil	40028701	NR	NR
	Aerobic Soil	46867004	NR	NR
	Aerobic Aquatic	46386604	NR	NR
	Anaerobic Soil	40028701	NR	NR
	Anaerobic Aquatic	46386602	NR	NR
	Terrestrial Field Dissipation	41320101	ND	ND
	Terrestrial Field Dissipation	41320102	<0.01 mg/kg (365 days)	<0.01 mg/kg-dw (365 days)
	Terrestrial Field	41320103	0.015 mg/kg (-7 days)	<0.01 mg/kg (92 days)

Transformation Product	Study Type	MRID	Maximum %AR (day)	Final %AR (study length)
	Dissipation			
	Terrestrial Field Dissipation	41320104	<0.01 mg/kg (6 days)	<0.01 mg/kg (275 days)
	Terrestrial Field Dissipation	41320105	0.04 mg/kg (3 days)	<0.02 mg/kg (247 days)
	Terrestrial Field Dissipation	41432701	ND	ND
	Terrestrial Field Dissipation	41432702	0.012 mg/kg (1 days)	<0.01 mg/kg (458 days)
	Terrestrial Field Dissipation	41432703	0.011 mg/kg (30 days)	<0.01 mg/kg (359 days)
	Terrestrial Field Dissipation	41432704	ND	ND
	Terrestrial Field Dissipation	41432705	0.015 mg/kg (14 days)	<0.01 mg/kg (269 days)
	Terrestrial Field Dissipation	41432706	0.17 mg/kg (0 days)	<0.02 mg/kg (364 days)
	Terrestrial Field Dissipation	41432707	ND	ND
Unextracted	Soil Photolysis	153229	30.11 natural light (32.6 hours)	30.11 natural light (32.6 hours)
	Aerobic Soil	40028701	36.2 (371 days)	36.2 (371 days)
	Aerobic Soil	46867004	19.0 (65 days)	15.9 (119 days)
	Aerobic Aquatic	46386604	48.8 pond-clay loam (100 days) 22.8 lake-sandy loam (100 days)	48.8 pond-clay loam (100 days) 22.8 lake-sandy loam (100 days)
	Anaerobic Soil	40028701	61.2 (31 days)	61.2 (31 days)
	Anaerobic Aquatic	46386602	25.1 (59 days)	25.1 (59 days)
Volatiles	Aerobic Soil	44746001	44.04% (366 days)	44.04 (366 days)
	Aerobic Soil	46867004	0.7 (119 days)	0.7 (119 days)
	Aerobic Aquatic	46386604	3.4 pond-clay loam (59 days) 3.2 lake-sandy loam (30 days)	1.9 pond-clay loam (100 days) 0.6 lake-sandy loam (100 days)
	Anaerobic Aquatic	46386602	4.4 (41 days)	4.4 (41 days)
Unknown	Soil Photolysis	153229	9.8 natural light (32.6 hours) 17.2 artificial light (216 hours)	9.8 natural light (32.6 hours) 13.2 artificial light (240 hours)
	Aerobic Soil	46867004	6.2 (65 days)	1.4 (119 days)
	Aerobic Aquatic	46386604	8.6 pond-clay loam (59 days) 7.6 lake-sandy loam (30 days)	8.6 pond-clay loam (100 days) 7.6 lake-sandy loam (100 days)
	Anaerobic Aquatic	40101501	4.4 (32 days)	
	Anaerobic Aquatic	46386602	3.7 (5 days)	4.0 (59 days)

3. EPISuite Output

SMILES : O(P(OCC)(Oc(nc(nc1C)C(C)C)c1)=S)CC
CHEM : Diazinon
MOL FOR: C12 H21 N2 O3 P1 S1
MOL WT : 304.35
---------- SUMMARY (AOP v1.92): HYDROXYL RADICALS (25 deg C) --------
Hydrogen Abstraction = 41.0391 E-12 cm3/molecule-sec
Reaction with N, S and -OH = 53.0000 E-12 cm3/molecule-sec
Addition to Triple Bonds = 0.0000 E-12 cm3/molecule-sec
Addition to Olefinic Bonds = 0.0000 E-12 cm3/molecule-sec
**Addition to Aromatic Rings = 2.6404 E-12 cm3/molecule-sec
Addition to Fused Rings = 0.0000 E-12 cm3/molecule-sec

OVERALL OH Rate Constant = 96.6795 E-12 cm3/molecule-sec
HALF-LIFE = 0.111 Days (12-hr day; 1.5E6 OH/cm3)
HALF-LIFE = 1.328 Hrs
..... ** Designates Estimation(s) Using ASSUMED Value(s)
---------- SUMMARY (AOP v1.91): OZONE REACTION (25 deg C) ----------

****** NO OZONE REACTION ESTIMATION ******
(ONLY Olefins and Acetylenes are Estimated)

Experimental Database: NO Structure Matches

SMILES : O(P(OCC)(Oc(nc(nc1C)C(C)C)c1)=S)CC
CHEM : Diazinon
MOL FOR: C12 H21 N2 O3 P1 S1
MOL WT : 304.35

Experimental Database Structure Match:
Name : DIAZINON
CAS Num : 000333-41-5
Exp LogKoc: 2.75
Exp Ref : Schuurmann,G et al (2006)

---------- KOCWIN v2.00 Results ----------

Koc Estimate from MCI:

First Order Molecular Connectivity Index ..... : 8.898
Non-Corrected Log Koc (0.5213 MCI + 0.60) ..... : 5.2383
Fragment Correction(s):
1 OrganoPhosphorus [P=S] ..... : -1.1599
1 Aromatic ring with 2 nitrogens ..... : -0.5964

Corrected Log Koc ..... : 3.4820

Estimated Koc: 3034 L/kg <==========

Koc Estimate from Log Kow:

Log Kow (experimental DB) ..... : 3.81
Non-Corrected Log Koc (0.55313 logKow + 0.9251) .... : 3.0325
Fragment Correction(s):
1 OrganoPhosphorus [P=S] ..... : -0.0917
1 Aromatic ring with 2 nitrogens ..... : 0.3984
Corrected Log Koc ..... : 3.3392

Estimated Koc: 2184 L/kg <==========

4. Literature Cited

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