Reviews of Environmental Contamination and Toxicology

Continuation of Residue Reviews

Editor
George W. Ware

VOLUME 123

Springer-Verlag
New York Berlin Heidelberg London Paris
Tokyo Hong Kong Barcelona Budapest

The SCS/ARS/CES Pesticide Properties Database for Environmental Decision-Making[1]

R.D. Wauchope*, T.M. Buttler**, A.G. Hornsby**, P.W.M. Augustijn-Beckers**, and J.P. Burt†

I. Introduction

A principal goal of pesticide science is to be able to predict the environmental impact of a pesticide before it is released into the environment. To save expense and time, we would like to be able to make such a prediction for each pesticide with as few laboratory experiments on the pesticide as possible, and even fewer field experiments. Environmental processes, however, are enormously complex and sometimes (apparently) random. The sites of most interest—agricultural fields, forests, lakes, streams, etc.—are subtle living

[1]Approved for publication as Florida Agricultural Experiment Station Journal Series No. R-01529.
*USDA-Agricultural Research Service, Tifton, Georgia 31793.
**Cooperative Extension Service, Institute for Food and Agricultural Science, University of Florida, Gainesville, Florida 32611.
†USDA-Soil Conservation Service, P.O. Box 2890, Washington, D.C. 20013.

Editor's Note: In this volume, we have deviated from the traditional referencing system to one using numbered references. This was done to accommodate the large number of references listed simultaneously in the text, and in particular to enable simplified referencing within the massive data sets found in Appendix B. All references are both numbered and alphabetized in the References Section.

Appendix A: SCS/ARS/CES pesticide properties database: selected values at 20–25°C 10/18/91

Common name	Solubility (mg/L)	Half-life (d)	Soil sorption (K_{oc})	Vapor pressure (mm Hg)	Acid pK_a	Base pK_b
1,3-Dichloropropene	2,250	10	32	29		
1-Naphthaleneacetamide	100 E	10G	100 E	—	—	
2,4,5-T amine salts	500,000 E	24	80	0	2.84	
2,4-D acid	890	10	20	8×10^{-6}	2.8	
2,4-D dimethylamine salt	796,000	10	20	0	2.8	
2,4-D esters or oil-sol. amines	100 E	10{1}	100 E	—	2.8{1,2}	
2,4-DB butoxyethyl ester	8	7{1}	500	$<1 \times 10^{-7}$	4.8{1,2}	
2,4-DB dimethylamine salt	709,000	10 E	20 E	0	4.8{2}	
3-CPA sodium salt	200,000 E	10 E	20 E	0	—	
Acephate	818,000	3	2	1.7×10^{-6}		
Acifluorfen sodium salt	250,000	14	113 E	0	—	
Alachlor	240	15	170	1.4×10^{-5}		
Aldicarb	6,000	30	30	3×10^{-5}		
Aldoxycarb (aldicarb sulfone)	10,000	20	10 E	9×10^{-5}		
Ametryn	185	60	300	2.738×10^{-6}		10.07
Amitraz	1	2	1,000 E	2.6×10^{-6}		9.8
Amitrole (aminotriazole)	360,000	14	100	4.4×10^{-7}		9.83
Ancymidol	650	120	120	2×10^{-7}		
Anilazine	8	1	1,000 E	6.2×10^{-9}		
Arsenic acid	17,000	10,000 E{3}	100,000 E{4}	0	2.3, 7.1, 11.6{5}	
Asulam sodium salt	550,000	7	40{2}	0	4.8	
Atrazine	33	60	100	2.89×10^{-7}		12.32
Azinphos-methyl	29	10	1,000	2×10^{-7}		
Bendiocarb	40	5	570	3.5×10^{-5}	8.8	
Benefin (benfluralin)	0.1	40	9,000	6.6×10^{-5}		
Benomyl	2.0	67	1,900	$<1 \times 10^{-10}$		
Bensulfuron methyl	120(pH7)	5	370(pH7)	2.1×10^{-14}	5.2	
Bensulide	5.6	120	1,000 E	8.0×10^{-7}		
Bentazon sodium salt	2,300,000	20	34{2}	0	—	
Bifenox	0.398	7	10,000 E	2.4×10^{-6}		
Bifenthrin	0.1	26	240,000	1.8×10^{-7}		
Bromacil acid	700	60	32	3.1×10^{-7}	9.1	
Bromacil lithium salt	700{2}	60	32	3.1×10^{-7}	9.1	
Bromoxynil butyrate ester	27	7	1,079	1×10^{-4}	4.1	
Bromoxynil octanoate ester	0.08	7{2}	10,000 E	4.8×10^{-6}	4.1{2}	
Butylate	44	13	400	1.3×10^{-2}		
Captan	5.1	2.5	200	8.0×10^{-8}		
Carbaryl	120	10	300	1.2×10^{-6}		
Carbofuran	351	50	22	6.0×10^{-7}		
Carboxin	195	3	260	1.8×10^{-7}		
Chloramben salts	900,000 E{6}	14	15 E{6}	0	3.40	
Chlordimeform hydrochloride	500,000	60 G	100,000 E{7}	3.2×10^{-6}		
Chlorimuron ethyl	1,200(pH7)	40	110(pH7)	4×10^{-12}	4.2	
Chlorobenzilate	13	20 G	2,000 E	6.8×10^{-6}		
Chloroneb	8	130	1,650	0.003		
Chloropicrin	2,270	1 E{8}	62	18		
Chlorothalonil	0.6	30	1,380	0.001 E		
Chloroxuron	2.5	60	3,000	3.9×10^{-9}		
Chlorpropham (CIPC)	89	30	400 E	8×10^{-6}		
Chlorpyrifos	0.4	30	6,070	1.7×10^{-5}		
Chlorsulfuron	7,000(pH7)	40	40(pH7)	4.6×10^{-6}	3.6	
Clomazone (dimethazone)	1,100	24	300	1.4×10^{-4}		
Clopyralid amine salt	300,000 E	40	6	0	2.3	
Cyanazine	170	14	190	1.6×10^{-9}		12.9

(Continued)

Appendix A: (*Continued*)

Common name	Solubility (mg/L)	Half-life (d)	Soil sorption (K_{oc})	Vapor pressure (mm Hg)	Acid pK_a	Base pK_b
Cycloate	95	30	430	1.6×10^{-3}		
Cyfluthrin	0.002	30 E	100,000 E	1.6×10^{-8}		
Cypermethrin	0.004	30 E	100,000 E	1.4×10^{-9}		
Cyromazine —	136,000	150	200 E	3.36×10^{-9}		—
Dalapon sodium salt	900,000	30	1	0	1.84	
DBCP	1,000	180	70	0.9		
DCNA (dicloran) —	7	60	1,000 E	1.3×10^{-6}		
DPCA (chlorthal-dimethyl) —	0.5{9}	100	5,000{9}	2.5×10^{-6}		
Desmedipham	8	30	1,500	3×10^{-9}		
Diazinon —	60	40	1,000 E	6×10^{-5}		
Dicamba salt	400,000{10}	14	2	0	1.91	
Dichlobenil —	21.2	60	400 E	1.0×10^{-3}		
Dichlorprop (2,4-DP) ester	50 E	10	1,000 E	3×10^{-6} E	2.86{2}	
Diclofop-methyl	0.8	30(pH7){2, 11}	16,000	3.5×10^{-6}	3.1{2}	
Dicofol —	0.8	45	5000 E	4.0×10^{-7}		
Dicrotofos —	1,000,000 E	20	75	1.6×10^{-4}		
Diethatyl-ethyl	105	30	1,400 E	3.2×10^{-6}		
Difenzoquat methylsulfate salt	817,000	100	54,500{7}	0		—
Diflubenzuron	0.08	10	10,000	9.0×10^{-10}		
Dimethipin	3,000	120	10 E	3.8×10^{-7}		
Dimethoate —	39,800	7	20	2.5×10^{-5}		
Dinocap —	4	5	550 E	4.0×10^{-8}		
Dinoseb phenol	50(pH4)	20	500(pH4)	8×10^{-3}	4.5	
Dinoseb salts	2,200(pH7)	20	63(pH7)	0	4.5	
Diphenamid	260	30	210	3.0×10^{-8}		
Dipropetryn	16	100 E	900	7.4×10^{-7}		—
Diquat dibromide salt	718,000	1,000{12}	1,000,000 E{7}	0		10 E
Disulfoton —	25	30 E	600 E	1.5×10^{-4}		
Diuron —	42	90	480	6.9×10^{-9}		
DNOC sodium salt	100,000 E(pH7)	20 G	20(pH7)	0	4.4	
Dodine acetate	700	20 G	100,000 E	$<10^{-7}$		1 E
Endosulfan —	0.32	50	12,400	1.7×10^{-7}		
Endothall (endothal) salt	100,000(pH7)	7	20 E(pH7)	0	3.4, 6.7	
EPTC —	344	6	200	3.4×10^{-2}		
Esfenvalerate	0.002	35	5,300	1.1×10^{-8}		
Ethalfluralin —	0.3	60	4,000	8.8×10^{-5}		
Ethephon	1,239,000	10	100,000 E	$<10^{-7}$	—	
Ethion —	1.10	150{13}	10,000	2.4×10^{-6}		
Ethofumesate	50	30	340	4.9×10^{-6}		
Ethoprop (ethoprophos) —	750	25	70	3.8×10^{-4}		
Etridiazole	50	103	1,000 E	1×10^{-4}		
Fenac (chlorfenac) salt	500,000 E(pH7)	180	20 E(pH7)	0	3.70	
Fenamiphos —	400	50 E{14}	100{14}	1×10^{-6}		
Fenarimol	14	360	600	2.2×10^{-7}		
Fenbutatin oxide	0.0127	90	2,300	1.8×10^{-11}		
Fenoxaprop-ethyl	0.8	9{1}	9,490	3.2×10^{-8}		
Fenoxycarb	6	1	1,000 E	1.3×10^{-8}		
Fenthion —	4.2	34	1,500	2.78×10^{-6}		
Fenvalerate	0.002	35	5,300	1.1×10^{-8}		
Ferbam	120	17	300	$<10^{-5}$		
Fluazifop-*p*-butyl	2	15{15}	5,700	2.5×10^{-7}		
Flucythrinate	0.06	21	100,000 E	8.7×10^{-9}		
Flumetralin	0.1	20 G	10,000 E	$<1 \times 10^{-6}$		
Fluometuron —	110	85	100	9.376×10^{-7}		

(*Continued*)

Appendix A: (*Continued*)

Common name	Solubility (mg/L)	Half-life (d)	Soil sorption (K_{oc})	Vapor pressure (mm Hg)	Acid pK_a	Base pK_b
Fluridone	10	21{24}	1,000	1×10^{-7}		12.3
Fluvalinate	0.005	7	1,000,000 E	$<10^{-7}$		
Fomesafen sodium salt	700,000	100{2}	60	0	2.7	
Fonofos —	16.9	40	870	3.4×10^{-4}		
Formetanate hydrochloride salt	500,000	100 G{12}	1,000,000 E{7}	0		
Fosamine ammonium salt	1,790,000	8	150	4×10^{-5}	—	—
Fosetyl-aluminum	120,000	0.1	20	$<10^{-7}$		
Glufosinate ammonium salt	1,370,000	7	100 E	0	1.0	
Glyphosate isopropylamine salt	900,000 E	47	24,000 E{16}	0	2.3, 5.86, 10.9{5}	
Hexazinone	33,000	90	54	2.0×10^{-7}		
Hexythiazox	0.5	30	6,200	2.3×10^{-8}		
Hydramethylnon (amdro)	0.006	10	730,000 E	2.0×10^{-8}		
Imazamethabenz-methyl (*m*-isomer)	1,370	45	66	1.1×10^{-8}	2.9	
Imazamethabenz-methyl (*p*-isomer)	857	45	35	1.1×10^{-8}	2.9	
Imazapyr acid	11,000	90	100 E(pH7)	$<1 \times 10^{-8}$	1.9, 3.6{5}	
Imazapyr isopropylamine salt	500,000 E	90{17}	100 E(pH7)	0	1.9, 3.6{5}	
Imazaquin ammonium salt	160,000 E(pH7)	60	20 E(pH7)	0	3.8	
Imazethapyr	200,000 E(pH7)	90	10 E(pH7)	—	2.1, 3.9{5}	
Iprodione	13.9	14	700	$<1 \times 10^{-7}$		
Isazofos	69	34	100	8.7×10^{-5}		
Isofenphos —	24	150 E	600	3×10^{-6}		
Isopropalin	0.1	100	10,000	8.8×10^{-6}		
Lactofen	0.1	3	10,000 E	8×10^{-9}		
Lambda-cyhalothrin	0.005	30	180,000	1.5×10^{-9}		
Lindane —	7	400	1,100	3.3×10^{-5}		
Linuron —	75	60	400	1.7×10^{-5}		
Malathion —	130	1	1,800	8×10^{-6}		
Maleic hydrazide potassium salt	400,000{18}	30	20 E{18}	0	5.65	
Mancozeb	6	70{19}	>2,000	0		
Maneb	6 E	70{19}	>2000 E	0		
MCPA dimethylamine salt	866,000(pH7)	25{2}	20 E(pH7)	0	3.12	
MCPA ester	5 E	25{2}	1,000 E	1.5×10^{-6}{1}		
MCPB sodium salt	200,000 E	14	20 E(pH7)	0	4.80	
Mecoprop (MCPP) dimethylamine salt	660,000(pH7)	21	20 E(pH7)	0	3.11	
Mepiquat chloride salt	1,000,000	1,000 E{12}	1,000,000 E	0		
Metalaxyl	8,400	70	50 E	5.62×10^{-6}		
Metaldehyde	230	10 G	240	—		
Metham (metam) sodium salt	963,000	7{20}	10 E{20}	20.0{20}		
Methamidophos —	1,000,000 E	6	5	8×10^{-4}		
Methanearsonic acid sodium salt	1,400,000	1,000 E{3, 12}	100,000 E	0	4.11, 9.15{5}	
Methazole —	1.5	14	3,000 E	1×10^{-6}		
Methidathion	220	7	400 E	3.37×10^{-6}		
Methiocarb (mercaptodimethur) —	24	30 E	300 E	1.2×10^{-4}		
Methomyl —	58,000	30	72	5.0×10^{-5}		
Methoxychlor	0.1	120	80,000	— solid (m.p. 89°C)		
Methyl bromide	13,400	55	22	1,824		
Methyl isothiocyanate	7,600	7	6	20		
Methyl parathion —	60	5	5,100	1.5×10^{-5}		
Metiram	0.1 E	20 G	500,000 G	0		
Metolachlor	530	90	200	3.135×10^{-5}		
Metribuzin —	1,220	40	60 E	$<1 \times 10^{-5}$		13.00
Metsulfuron-methyl	9,500(pH7)	30	35(pH7)	2.5×10^{-12}	3.3	
Mevinphos—	600,000	3	44	1.3×10^{-4}		

(*Continued*)

Appendix A: (*Continued*)

Common name	Solubility (mg/L)	Half-life (d)	Soil sorption (K_{oc})	Vapor pressure (mm Hg)	Acid pK_a	Base pK_b
Molinate —	970	21	190	5.6×10^{-3}		
Monocrotophos	1,000,000	30	1 E	7×10^{-5}		
NAA ethyl ester	105	10 G	300 E	1.6×10^{-5}		
NAA sodium salt	419,000(pH7)	10 G	20 E(pH7)	0	4.2	
Naled —	2,000	1	180	2.0×10^{-4}		
Napropamide	74	70	700	1.7×10^{-7}		
Naptalam sodium salt	231,000(pH7)	14	20 E(pH7)	0	4.0	
Nitrapyrin	40	10	570	2.8×10^{-3}		
Norflurazon —	28	30 E	700	2×10^{-8}		
Oryzalin	2.5	20	600	$<1 \times 10^{-8}$	8.6	
Oxadiazon	0.7	60	3,200	10^{-6}		
Oxamyl —	282,000	4	25	2.3×10^{-4}		
Oxycarboxin	1,000	20 G	95 E	$<10^{-5}$		
Oxydemeton-methyl	1,000,000	10	10	2.9×10^{-5}		
Oxyfluorfen —	0.1	35	100,000 E	2×10^{-7}		
Oxythioquinox (quinomethionate)	1	30	2,300	2×10^{-7}		
Paraquat dichloride salt	620,000	1,000 E{12}	1,000,000 E{7}	0		<4 E
Parathion (ethyl parathion) —	24	14	5,000 E	5×10^{-6}		
PCNB —	0.44	21	5,000 E	1.1×10^{-4}		
Pebulate	100	14	430	8.9×10^{-3}		
Pendimethalin —	0.275	90	5,000	9.4×10^{-6}		
Permethrin —	0.006	30	100,000	1.3×10^{-8}		
Petroleum oil	100 G{21}	10 G{21}	1,000 G{21}	10^{-3} G		
Phenmedipham	4.7	30	2,400	1.0×10^{-11}		
Phorate —	22	60 E	1,000 E	6.4×10^{-4}		
Phosalone	3.0	21	1,800	$<5 \times 10^{-7}$		
Phosmet —	20	19	820	4.9×10^{-7}		
Phosphamidon	1,000,000 E	17	7	1.65×10^{-5}		
Picloram salt	200,000 E	90	16	0	1.9, 4{5}	
Piperalin	20	30	5,000	$<1 \times 10^{-7}$		
Pirimiphos-methyl	9	10	1,000 E	1.5×10^{-5}		
Prochloraz	34	120	500 E	1.1×10^{-6}	3.8	
Profenofos —	28	8	2,000	9.001×10^{-7}		
Prometon —	720	500	150	7.73×10^{-6}		9.73
Prometryn —	33	60	400	1.238×10^{-6}		9.95
Pronamide (propyzamide)	15	60	800	8.5×10^{-5}		
Propachlor —	613	6.3	80	2.3×10^{-4}		
Propamocarb	1,000,000	30	1,000,000 E	0		4.9
Propanil —	200	1	149	4×10^{-5}		
Propargite —	0.5	56	4,000 E	3×10^{-3}		
Propazine —	8.6	135	154	1.31×10^{-7}		12.15
Propham (IPC)	250	10	200 E	—		
Propiconazole	110	110	650	4.2×10^{-7}		
Propoxur —	1,800	30	30	9.7×10^{-6}		
Pyrazon (chloridazon)	400	21	120	0.05		
Quizalofop-ethyl	0.31	60	510	3.0×10^{-7}		
Sethoxydim	4,390(pH7)	5	100 E(pH7)	1.6×10^{-7}		
Siduron —	18	90	420	4.0×10^{-9}		
Simazine —	6.2	60	130	2.21×10^{-8}		12.35
Sulfometuron-methyl	70(pH7)	20	78(pH7)	6.0×10^{-16}	5.2	
Sulprofos	0.31	140 E	12,000 E	6.3×10^{-7}		
Tebuthiuron —	2,500	360	80	2×10^{-6}		
Temephos	0.001	30 G	100,000 E	—		
Terbacil —	710	120	55	3.1×10^{-7}	9	

(*Continued*)

Appendix A: (*Continued*)

Common name	Solubility (mg/L)	Half-life (d)	Soil sorption (K_{oc})	Vapor pressure (mm Hg)	Acid pK_a	Base pK_b
Terbufos —	5	5	500	3.2×10^{-4}		
Terbutryn	22	42 E	2,000	2.1×10^{-6}		9.7
Thiabendazole	50(pH7)	403	2,500	4×10^{-9} {22}	4.7	
Thidiazuron	20	10 G	110 E	2.3×10^{-11}		
Thifensulfuron-methyl	2,400(pH6)	12	45(pH7)	1.3×10^{-10}	4.0	
Thiobencarb —	28	21	900	2.2×10^{-5}		
Thiodicarb —	19.1	7	350	1×10^{-7}		
Thiophanate-methyl	3.5	10 G	1,830 E	$< 10^{-7}$		
Thiram	30	15	670	$< 10^{-5}$		
Toxaphene —	3	9	100,000	4×10^{-6}		
Tralomethrin	0.001 E	27	100,000 E	1.3×10^{-13}		
Triadimefon	71.5	26	300	1.5×10^{-8}		
Triallate —	4	82	2,400	1.1×10^{-4}		
Tribufos —	2.3	10	5,000	1.6×10^{-6}		
Trichlorfon —	120,000	10	10	2×10^{-6}		
Triclopyr amine salt	2,100,000	46	20 E	0	2.68	
Triclopyr ester	23	46	780 {23}	1.26×10^{-6} {2}	2.68 {2}	
Tridiphane	1.8	28	5,600	2.2×10^{-4}		
Trifluralin —	0.3	60	8,000	1.1×10^{-4}		
Triforine —	30	21	200	2.0×10^{-7}		
Trimethacarb	58	20 G	400 E	5.1×10^{-5}		
Triphenyltin hydroxide	1	75	23,000	3.53×10^{-7}		
Vernolate	108	12	260	9.7×10^{-5}		

{1} Ester is quickly converted to parent acid
{2} Parent acid value
{3} Natural soil component
{4} Di-anion
{5} Multiple acid
{6} Depends on pH for pH < 5
{7} Cation sorption to clay surfaces
{8} Extremely susceptible to nucleophilic attack
{9} Hydrolyzes to much more soluble/mobile parent acid or diacid
{10} Sodium salt
{11} Half-life of significant residue
{12} Long-lived because of extremely tight soil sorption
{13} Weighted for initial rapid degradation followed by slow degradation
{14} Weighted for sulfoxide as major residue
{15} Parent acid value (significant residue)
{16} Anionic, phosphate-like soil sorption
{17} Major residue in soil is parent compound
{18} Depends on pH but pH of value unspecified
{19} Weighted for value of major residue
{20} Value for major residue: methy isothiocyanate
{21} Mixture of hydrocarbons
{22} Involatile (VP = 0) at pH > 6
{23} Probably rapidly hydrolyzes to more mobile acid
{24} Persistence in aquatic-much more persistent in soil

Appendix B: The Data

For each of the pesticide property parameters the data base contains values found in the literature with reference, and a selected value which we believe to be the best value currently available. Some notations and abbreviations common to all fields are:

{n} Curly brackets with a number n, indicate NOTE n given at the end of the Literature Values section.

[n] Indicates literature citation number n.

( ) Parentheses are used to enclose notes on a specific value, such as the *pH* where the measurement was made. If a percentage (%) value is given that refers to a coefficient of variation.

, ; Commas are used to separate different values given in a single reference. Semicolons are used to separate information from different references.

E This denotes that the value is an "estimate", meaning either (a) an unusually wide range of values have been reported and we had no reason select any one value as a "best" value, or (b) no experimental value is available but a reasonable estimation was possible.

G This denotes a "guess" value—neither an experimental value nor a good estimation procedure were available.

20C: Used to indicate the temperature (°C) at which the value which follows was measured. Sometimes the notation "rt:" is used to indicate that the measurement was reported to be at "room tempature", typically this means 20--25 °C.

Our procedures for determining "E" and "G" values are discussed under each parameter above.

COMMON NAME: 1,3-DICHLOROPROPENE
CHEMICAL NAME: 1,3-dichloro-1-propene
TRADE NAME: Telone II, Vorlex (mixture with methyl isothiocyanate), Telone C-17 (mixture with chloropicrin)
CASRN: 542-75-6
MOLECULAR FORMULA: $C_3H_4Cl_2$
MOLECULAR WEIGHT: 111.0
MANUFACTURERS: Dow, Nor-Am
USE: nematicide/soil fumigant: 45 vegetables, 28 field crops, fruits, nuts, noncropland
FORMULATION: 94% liquid or liquid mixed with chloropicrin
APPLICATION MODE: injection of volatile liquid beneath soil surface

Property values from literature with references
WATER SOLUBILITY (mg/L): 20C: 1000 [21,140]; 2250 [128]
FIELD HALF LIFE (days): 10 [80]; 16 [87]
SORPTION COEFFICIENT (ml/g): cis: 23, 26 trans:26, 29 [57]; 68 [87]; cis: 798, trans: 1379 [57,134]; 98 [91]; 32 [128]
VAPOR PRESSURE (mm Hg): 20C: 29 [140,141]

Selected property values
WATER SOLUBILITY (mg/L): 2250
FIELD HALF LIFE (days): 10
SORPTION COEFFICIENT (ml/g): 32
VAPOR PRESSURE (mm Hg): 29

COMMON NAME: 1-NAPHTHALENEACETAMIDE
CHEMICAL NAME: amide of NAA (1-naphthaleneacetic acid)
TRADE NAME: Amid-Thin
CASRN: 86-86-2
MOLECULAR FORMULA: $C_{12}H_{11}NO$
MOLECULAR WEIGHT: 185.2
MANUFACTURERS: Rhone-Poulenc
USE: growth regulator: apples and pears
FORMULATION: wettable powder
APPLICATION MODE: crop plant spray

Property values from literature with references
WATER SOLUBILITY (mg/L): 17C: 380 (acid) [181]; 20C: 420 (acid) [181] assume amide much less soluble ca. 100E
FIELD HALF LIFE (days): assume fairly labile amide: 10 G
SORPTION COEFFICIENT (ml/g): 11 (parent acid) [89] {1}; based on solubility: 100 E
VAPOR PRESSURE (mm Hg): --
pKa: --
NOTES: {1} calculated using equation 13, Karickhoff

Selected property values
WATER SOLUBILITY (mg/L): 100 E
FIELD HALF LIFE (days): 10 G
SORPTION COEFFICIENT (ml/g): 100 E
VAPOR PRESSURE (mm Hg): --
pKa: --