APPENDIX A: ECOLOGICAL EFFECTS DATA

Pesticide Name: Paraquat Dichloride (as Paraquat cation)
PC Code: 061601

Habitat	Taxa	Effect Type	Endpoint	Value (in terms of cation)	Unit	Toxicity category	Study Classification	Source (MRID, author)
Aquatic	Freshwater fish Bluegill sunfish (*Lepomis macrochirus*)	Acute	96h LC50	13	mg/L	Slightly Toxic	Acceptable	40098001 Mayer & Ellersieck 1986
Aquatic	Freshwater fish Rainbow Trout (*Oncorhynchus mykiss*)	Acute	96h LC50	15	mg/L	Slightly Toxic	Acceptable	40098001 Mayer & Ellersieck 1986
Aquatic	Freshwater fish Rainbow Trout (*Oncorhynchus mykiss*)	Acute	96h LC50	38.68	mg/L	Slightly Toxic	Acceptable	00162736 Palmateer 1980
Aquatic	Freshwater fish Bluegill sunfish (*Lepomis macrochirus*)	Acute	96h LC50	156	mg/L	Practically Non-Toxic	Acceptable	00162737 Palmateer 1979
Aquatic	Freshwater fish Rainbow Trout (*Oncorhynchus mykiss*)	Acute	96h LC50	29	mg/L	Slightly Toxic	Acceptable	00162738 McCann 1977
Aquatic	Freshwater fish Channel Catfish (*Ictalurus punctatus*)	Acute	96h LC50	> 100	mg/L	Practically Non-Toxic	Supplemental	40098001 Mayer & Ellersieck 1986
Aquatic	Freshwater invertebrate Water flea (*Daphnia magna*)	Acute	48h EC50	1.2	mg/L	Moderately Toxic	Acceptable	00114473 Wheeler 1978
Aquatic	Freshwater invertebrate Water flea (*Daphnia pulex)*	Acute	48h EC50	4.0	mg/L	Moderately Toxic	Acceptable	40098001 Mayer & Ellersieck 1986

Habitat	Taxa	Effect Type	Endpoint	Value (in terms of cation)	Unit	Toxicity category	Study Classification	Source (MRID, author)
Aquatic	Freshwater invertebrate Water flea (*Daphnia magna*)	Acute	48h EC50	8.0	mg/L	Moderately Toxic	Acceptable	GS0262-028 Thompkins 1979
Aquatic	Freshwater invertebrate Scud (*Gammarus fasciatus*)	Acute	48h EC50	11	mg/L	Slightly Toxic	Supplemental	40098001 Mayer & Ellersieck 1986
Aquatic	Freshwater invertebrate Water flea (*Simocephalus serrulatus*)	Acute	48h EC50	3.7	mg/L	Moderately Toxic	Supplemental	40098001 Mayer & Ellersieck 1986
Aquatic	Freshwater invertebrate Stone fly (*Pteronarcys californica*)	Acute	48h EC50	> 100	mg/L	Practically Non-Toxic	Supplemental	40098001 Mayer & Ellersieck 1986
Aquatic	Crustacea Brown shrimp (*Penaeus aztecus*)	Acute	48h LC50	> 0.72	ppm	Highly Toxic	Supplemental	40228401 Mayer 1986
Aquatic	Mollusca Eastern oyster (*Crassostrea virginica*)	Acute	96h EC50	> 0.72	ppm	Highly Toxic	Supplemental	40228401 Mayer 1986
Aquatic	Marine/estuarine fish (Longnose Killifish)	Acute	LC50	0.724	mg/L	Moderately Toxic	Supplemental	40228401 Mayer 1986
Aquatic plants	Vascular aquatic plant Duckweed (*Lemna gibba*)	Acute	14d EC50 14d NOAEC	71 11.52	µg/L µg/L	Growth and reprod.	Acceptable	42601003 Smyth et al. 1992
Aquatic plants	Non-vascular aquatic plant Freshwater diatom (*Navicula pelliculosa*)	Acute	4d EC50 NOAEC	0.396 0.158	µg/L µg/L	Growth	Acceptable	42601006 Smyth et al. 1992
Aquatic plants	Non-vascular aquatic plant Green algae (*Selenastrum capricortum*)	Acute	4d EC50 NOAEC	0.23 0.058	mg/L mg/L	Growth	Acceptable	42601002 Smyth et al. 1992
Aquatic plants	Non-vascular aquatic plant Marine diatom (*Skeletonema costatum*)	Acute	4d EC50 NOAEC	2.04 0.158	mg/L mg/L	Growth	Acceptable	42601004 Smyth et al. 1992
Aquatic plants	Non-vascular aquatic plant Blue-green algae (*Anabeana flos-aquae*)	Acute	5d EC50 NOAEC	10.8 4.54	µg/L µg/L	Growth	Acceptable	42601005 Smyth et al. 1992

Habitat	Taxa	Effect Type	Endpoint	Value (in terms of cation)	Unit	Toxicity category	Study Classification	Source (MRID, author)
Aquatic plants	Non-vascular aquatic plant Marine algae (*Isochrysis glabana*)	Acute	EC50	3.6	mg/L	Growth	Supplemental	40228401 Mayer 1986
Aquatic plants	Non-vascular aquatic plant Marine diatom (*Phaeodactylum tricornutum*)	Acute	EC50	7.2	mg/L	Growth	Supplemental	40228401 Mayer 1986
Aquatic plants	Non-vascular aquatic plant Green algae (*Dunaliella tertiolecta*)	Acute	EC50	14.4	mg/L	Growth	Supplemental	40228401 Mayer 1986
Aquatic plants	Non-vascular aquatic plant (*Chlorococcum* sp.)	Acute	EC50	36	mg/L	Growth	Supplemental	40228401 Mayer 1986
Terrestrial	Avian Japanese Quail (*Coturnix coturnix japonica*)	Subacute dietary	5d LC50	703	ppm	Moderately Toxic	Supplemental	00022923 Hill et al. 1975
Terrestrial	Avian Northern bobwhite Quail (*Colinus virginianus*)	Subacute dietary	5d LC50	711	ppm	Moderately Toxic	Acceptable	00022923 Hill et al. 1975
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Subacute dietary	5d LC50	2914.6	ppm	Slightly Toxic	Acceptable	00022923 Hill et al. 1975
Terrestrial	Avian Ring-Neck Pheasant (*Phasianus colchicus*)	Subacute dietary	5d LC50	1068.5	ppm	Slightly Toxic	Acceptable	00022923 Hill et al. 1975
Terrestrial	Avian Northern bobwhite Quail (*Colinus virginianus*)	Acute oral	LD50	128.1	mg/kg bw	Moderately Toxic	Acceptable	00029001 Fink et al. 1979
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Acute oral	LD50	144.8	mg/kg bw	Moderately Toxic	Supplemental	00160000 Hudson et al. 1984
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Acute oral	LD50	436.8	mg/kg bw	Slightly Toxic	Supplemental	00160000 Hudson et al. 1984

Habitat	Taxa	Effect Type	Endpoint	Value (in terms of cation)	Unit	Toxicity category	Study Classification	Source (MRID, author)
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Applied directly to the eggs	50+d LOAEC NOAEL	0.72 < 0.72	LBA	N/A	Supplemental	43942604
Terrestrial	Avian Ring-Neck Pheasant (*Phasianus colchicus*)	Applied directly to the eggs	50d LOAEC NOAEL	0.72 < 0.72	LBA	N/A	Supplemental	43942605
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Applied directly to the eggs	20d LOAEC NOAEL	1.45 0.73	LBA	N/A	Supplemental	43942604
Terrestrial	Rodent Rat	Acute oral	LD50	137.6 (M) 90.98 (F)	mg/kg	Moderately Toxic	Acceptable	00054573 Rittenhouse 1977
Terrestrial	Rodent Rat (*Rattus rattus*)	Acute	5d LC50	1134.58	ppm	Slightly Toxic	Supplemental	TNM 030
Terrestrial	Rodent Rat (*Rattus rattus*)	Acute	5d LC50	933.12	ppm	Moderately Toxic	Supplemental	TNM 124
Terrestrial	Rodent Rat (*Rattus rattus*)	Acute	5d LC50	1624.32	ppm	Slightly Toxic	Supplemental	TNM 071
Terrestrial	Honeybee (*Apis mellifera*)	Acute	LD50	>34.8	µg/bee	Relatively Non Toxic	Acceptable	05001991 Stevenson 1978
Terrestrial	Honeybee (*Apis mellifera*)	Acute	48h LD50	6.04 (2.74% mortality)	µg/bee	Moderately Toxic	Acceptable	00028772
Terrestrial	Honeybee (*Apis mellifera*)	Acute	LD50	No determined 55% mortality after 2d, 90% after 3d	µg/bee	N/A	Supplemental	00111488 Moffett et al. 1972
Terrestrial	Honeybee (*Apis mellifera*)	Acute	Contact 48h LD50 (Tech)	> 103.68	µg/bee	Practically Non-Toxic	Acceptable	43942603

Habitat	Taxa	Effect Type	Endpoint	Value (in terms of cation)	Unit	Toxicity category	Study Classification	Source (MRID, author)
Terrestrial	Honeybee (*Apis mellifera*)	Acute	Contact 48h LD50 (Formulation)	36.72	µg/bee	Practically Non-Toxic	Acceptable	43942603
Terrestrial	Honeybee (*Apis mellifera*)	Acute	Oral 48h LD50 (Tech)	51.84	µg/bee	Practically Non-Toxic	Acceptable	43942603
Terrestrial	Honeybee (*Apis mellifera*)	Acute	Oral 48h LD50 (Formulation)	22.32	µg/bee	Practically Non-Toxic	Acceptable	43942603
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Chronic	NOAEC	30	ppm	Reproduction endpoints	Acceptable	00110455 Fink et al. 1982
Terrestrial	Avian Northern bobwhite Quail (*Colinus virginianus*)	Chronic	NOAEC	100	ppm	Mortality	Acceptable	00110453 Fink et al. 1981
Terrestrial	Avian Northern bobwhite Quail (*Colinus virginianus*)	Chronic	NOAEC	100 (highest level tested)	ppm	No effects	Supplemental	00110454 Fink et al. 1982
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Chronic	NOAEC	Not determined (% of paraquat not reported)	ppm	Mortality and growth	Supplemental	00162746
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Chronic	Not determined	Not determined	ppm	# of infertile eggs & dead embryos	Supplemental	439426-05
Terrestrial	Avian Mallard duck (*Anas platyrhynchos*)	Chronic	Not determined	Not determined	ppm	# of dead embryos, dead in shell, eggs hatched, & 28d old survivors	Supplemental	439426-04
Terrestrial	Rodent (Wistar Derived Alderley Park Strain)	Chronic	NOAEC NOAEL	108 7.5	ppm mg/kg bw	Reproductive	Acceptable (HED 2006)	00126783 00149748 00149749

Habitat	Taxa	Effect Type	Endpoint	Value (in terms of cation)	Unit	Toxicity category	Study Classification	Source (MRID, author)
Terrestrial	Rodent (Wistar Derived Alderley Park Strain)	Chronic	NOAEC NOAEL	18 0.9	ppm mg/kg bw	sublethal, (lung damage)	Acceptable (HED 2006)	00126783 00149748 00149749
Terrestrial plants	Terrestrial dicot Cocklebur (seedling emergence)	Acute	EC25	0.84	lbs cation/A	Growth	Acceptable	42639601 Canning and White 1992
Terrestrial plants	Terrestrial monocot Corn (using dicot data) (seedling emergence)	Acute	EC25	Assumed as sensitive as dicot	lbs cation/A	Growth	Acceptable	42639601 Canning and White 1992
Terrestrial plants	Terrestrial dicot Cocklebur (vegetative vigor)	Acute	21d EC25 EC05	0.014 0.0065	lbs cation/A	Growth	Acceptable	42601001 Canning and White 1992
Terrestrial plants	Terrestrial monocot Corn (vegetative vigor)	Acute	21d EC25 NOAEC	0.16 0.064	lbs cation/A	Growth	Acceptable	42601001 Canning and White 1992