

APPENDIX F. Ecological Effects Data – Naled and DDVP

TABLE 1. Acute Freshwater Fish Toxicity Study Results for Naled

Chemical	Species Name	Type	a.i.	96 Hr LC50 (ppb)	Corr A.I. (ppb)	CL	Curve slope	MRID, Author, Year, and Study Classification
Naled	Bluegill sunfish <i>Lepomis macrochirus</i>	Static	90	1990	---	1730-2290	8.8 (4.8-12.8)	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Cutthroat trout <i>Oncorhynchus clarki</i>	Static	90	130	----	N.C.	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Fathead minnow <i>Pimephales promelas</i>	Static	90	3340	----	1800-4900	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Lake trout <i>Salvelinus namaycush</i>	Static	90	92	----	56-140	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	Tech	160	---	150-170	N.R.	05003107, Macek et al. 1969, Acceptable
Naled	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	90	170	----	158-185	N.C.	40098001, Mayer & Ellersieck 1986 Acceptable
Naled	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	90	132	----	87-210	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	90	179	----	140-210	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	90	338	----	294-367	11.7 (5.5-18)	40098001, Mayer & Ellersieck 1986 Acceptable
Naled	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	90	231	----	212-251	12.0 (7.4-16.6)	40098001, Mayer & Ellersieck 1986 Acceptable

Chemical	Species Name	Type	a.i.	96 Hr LC50 (ppb)	Corr A.I. (ppb)	CL	Curve slope	MRID, Author, Year, and Study Classification
Naled (Ortho DibromLVC10)	Rainbow trout <i>Oncorhynchus mykiss</i>	Flow-thru	15	900 – nominal (800-1100)	210-mean measured	170-250 mean-measured	N.C.	00160740, Suprenant 1986 Acceptable
Naled (Ortho Fly Killer D)	Rainbow trout <i>Oncorhynchus mykiss</i>	Flow-thru	36	340 – nominal	122	215-1638–nom 77-590–corr ai	3.0 (0.56-5.4)	00263580, Surprenant 1986 Supplemental
Naled (Orthp Dibrom 8 EC)	Rainbow trout <i>Oncorhynchus mykiss</i>	Flow-thru	58	130 mean-measured	----	120-140 mean-measured	12.23 (6.0-18.4)	00263578, Surprenant 1986 Supplemental
Naled/Xylene (Dibrom 8)	Rainbow trout <i>Oncorhynchus mykiss</i>	Static	58/20	215	125	185-250	NA	TN 1061, USEPA 1977, Acceptable
Naled (Dibrom 8 EC)	Bluegill sunfish <i>Lepomis macrochirus</i>	Flow-thru	58	240 mean-measured	----	200-300 mean-measured	4.26 (1.1-7.4)	00263578, Surprenant 1986 Supplemental
Naled (Ortho DibromLVC10)	Bluegill sunfish <i>Lepomis macrochirus</i>	Flow-thru	15	4000 – nominal (3400-4600)	600-mean measured	510-700 mean-measured	N.R.	00160741, Suprenant 1986 Acceptable
Naled (Ortho Fly Killer D)	Bluegill sunfish <i>Lepomis macrochirus</i>	Flow-thru	36	1200 – nominal (1000-1300)	350	300-410 mean-measured	6.4 (4.2-8.7)	00263580, Surprenant 1986 Supplemental
Naled/Xylene (Dibrom 8-E mixture)	Bluegill sunfish <i>Lepomis macrochirus</i>	Static	58/20	1200	696	1.018-1.415	NR	TN 364, USDA/USEPA Animal Biology Lab, 1971 Supplemental
Naled (Dibrom 14)	Atlantic salmon <i>Salmo salar</i>	Static	Form	165 (24-hr)	165		NR	GS092017, Dean et al. 1977, Supplemental

N.C. = Not calculated – binomial or moving average, could not use probit method

N.R. = Not reported

TABLE 2. Acute Freshwater Fish Toxicity Study Results for DDVP

Species Name	Type	a.i.	Endpoint	ppb (A.I.) as DDVP	ppb (as Naled)	Confidence Limits	Slope (95% CI)	MRID, Author, Year, and Study Classification
Bluegill sunfish <i>Lepomis macrochirus</i>	Static	0.04	96 hr LC50	>180000	>310182	N.R.		TN 949 USDA/USEPA Animal Biology Lab, 1976 Supplemental
Bluegill sunfish <i>Lepomis macrochirus</i>	Static	0.46	96 hr LC50	800	1379	0.6-1.0		TN 920 USDA/USEPA Animal Biology Lab, 1976 Supplemental

Species Name	Type	a.i.	Endpoint	ppb (A.I.) as DDVP	ppb (as Naled)	Confidence Limits	Slope (95% CI)	MRID, Author, Year, and Study Classification
Bluegill sunfish <i>Lepomis macrochirus</i>	Static	98.1	64 hr LC50	1350	2326	N.A.		TN 109, USDA/USEPA Animal Biology Lab, 1968 Supplemental
Bluegill sunfish <i>Lepomis macrochirus</i>	Static	100	96 hr LC50	920	1585	700-1083	6.93 (4.1-9.8)	40098001, Mayer & Ellersieck 1986 Supplemental
Cutthroat trout <i>Oncorhynchus clarki</i>	Static	90	96 hr LC50	171.5	295.5	N.C.	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Cutthroat trout <i>Oncorhynchus clarki</i>	Static	100	96 hr LC50	159	274	N.C.	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Fathead minnow <i>Pimephales promelas</i>	Static	100	96 hr LC50	12079	20812	8968-14778	4.8 (2.4-7.2)	40098001, Mayer & Ellersieck 1986 Supplemental
Lake trout <i>Salvelinus namaycush</i>	Static	90	96 hr LC50	176	303	120-320	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Lake trout <i>Salvelinus namaycush</i>	Static	100	96 hr LC50	208.8	360	N.C.	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Mosquitofish <i>Gambusia affinis</i>	Static	100	96 hr LC50	12445	21443	7500-16000	N.C.	40098001, Mayer & Ellersieck 1986 Supplemental
Rainbow trout <i>Oncorhynchus mykiss</i>	Static	98.1	96 hr LC50	100	172	0.78-1.27		TN 104, USDA/USEPA Animal Biology Lab, 1968 Supplemental
Rainbow trout <i>Oncorhynchus mykiss</i>	Static	100	24 hr LC50	500	861.5	N.R.		40098001, Mayer & Ellersieck 1986 Supplemental

N.C. = Not calculated – binomial, could not use probit method

N.R. = Not reported

Table 3. Freshwater Aquatic Invertebrate Acute Toxicity Study Results for Naled

Chemical	Species Name	Age	Type	AI	Study time	Toxicity (ppb*)	CL	Curve slope	MRID, Author, Year, and Study Classification
Naled	Daphnid <i>Simocephalus serrulatus</i>	Juv1	Static	90	48 hr EC50	1.0	0.9-1.3	8.0 (4.2-11.7)	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Scud <i>Gammarus fasciatus</i>	Adult	Static	Tech	96 hr LC50	14	11-18	N.R.	05017538, Sanders 1972, Supplemental
Naled	Scud <i>Gammarus lacustris</i>	N.R.	Static	97	48 hr LC50	110	80-155	N.R.	05009242, Sanders 1969, Supplemental
Naled	Scud <i>Gammarus fasciatus</i>	Mat.	Static	90	96 hr LC50	111	82-147	4.6 (2.3-6.9)	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Stonefly <i>Pteronarcys californica</i>	N.R.	Static	90	96 hr LC50	<10 lowest concentration tested >50% mortality	N.C	N.R.	40098001, Mayer & Ellersieck 1986 Supplemental
Naled	Water flea <i>Daphnia magna</i>	N.R.	Static	91.6	48 hr EC50	0.3	0.2-0.4	N.R.	00097572, Wheeler 1978, Supplemental
Naled	Water flea <i>Daphnia magna</i>	<24 hr	Static	85	48 hr EC50	0.5	0.3-0.7	3.35	00084406, Wheeler 1978, Supplemental
Naled	Water flea <i>Daphnia pulex</i>	Juv	Static	90	48 hr EC50	0.33	0.15-0.43	5.1 (1.6-8.6)	40098001, Mayer & Ellersieck, 1986 Supplemental
Naled	Water flea <i>Daphnia magna</i>	<24 hr	Flow-thru	36	48 hr EC50	2.0	N.R.	8.0	00160745, Surprenant 1986, Supplemental
Naled	Water flea <i>Daphnia magna</i>	<24 hr	Flow-thru	58	48 hr EC50	1.5	1.4-1.6	N.R.	00160700, Hober & Wells, 1986, Acceptable
Naled (Ortho DibromLVC10)	Water flea <i>Daphnia magna</i>	<24 hr	Flow-thru	15	48 hr EC50	2.9	2.5-3.4	5.3	00160742, Surprenant 1986, Supplemental

N.C. = Not calculated – binomial, could not use probit method

N.R. = Not reported

TABLE 4. Freshwater Aquatic Invertebrate Acute Toxicity Study Results for DDVP

Chemical	Species Name	Age	Type	AI	Study time	ppb as DDVP	ppb (as Naled)	CL	Slope (95% CI)	MRID, Author, Year, and Study Classification
DDVP	Daphnid <i>Simocephalus serrulatus</i>	1st-I	Static	100	48 hr EC50	0.26	0.448	0.15-0.40	2.3 (1.1-3.4)	40098001, Mayer & Ellersieck 1986, Supplemental
DDVP	Daphnid <i>Simocephalus serrulatus</i>	1st-I	Static	100	48 hr EC50	0.23		0.14-.0.34	2.7 (1.4-3.9)	40098001, Mayer & Ellersieck 1986, Supplemental
DDVP	Mud snail <i>Simocephalus serrulatus</i>	0.63g	Static	90	96 hr LC50	>25.7	>44.3	N.R.	N.R.	00077620, Eisler 1964, Supplemental
DDVP	Scud <i>Gammarus fasciatus</i>	N.R.	Static	Tech	96 hr LC50	0.4	0.69	0.32-0.49	N.R.	05017538, Sanders 1972, Supplemental
DDVP	Scud <i>Gammarus fasciatus</i>	Adult	Static	100	96 hr LC50	0.50	0.862	0.34-0.65	4.5 (2.0-7.0)	40098001, Mayer & Ellersieck 1986, Supplemental
DDVP	Stonefly <i>Pteronarcys californica</i>	yr	Static	100	96 hr LC50	0.10	0.17	0.03-0.14	4.5 (0.74-8.3)	40098001, Mayer & Ellersieck 1986, Supplemental
DDVP	Water flea <i>Daphnia pulex</i>	1st-I	Static	100	48 hr EC50	0.0668	0.114	0.05-0.09	7.7 (3.3-12.1)	40098001, Mayer & Ellersieck 1986, Acceptable

N.R. = Not reported

TABLE 5. Acute Estuarine/Marine Fish & Invertebrate Toxicity Study Results for Naled

Chemical	Species Name	Type	a.i.	96 Hr LC50 (ppb)	CL	Curve slope	MRID, Author, Year, and Study Classification
Naled	Sheepshead minnow <i>Cyprinodon variegatus</i>	Flow-thru	90	1200	1000-1400	5.1 (3.0-7.2)	00160746, Surprenant, 1986, Acceptable
Naled Dibrom 8EC	Sheepshead minnow <i>Cyprinodon variegatus</i>	Flow-thru	59.6	1200 mean-measured	970-1400	5.2 (3.3-7.1)	42637201, Bettencourt 1993, Acceptable
Naled	Striped bass <i>Morone saxatilis</i>	Static	90	500	100-2400	NA	05000819, Korn & Earnest 1974, Supplemental
Naled Dibrom 8EC	Mysid <i>Americamysis bahia</i>	Flow-thru	59.6	8.8 mean-measured	7.7-10	9.09	42637202, Bettencourt 1993, Acceptable
Naled	Grass Shrimp <i>Palaemonetes vulgaris</i>	Flow-thru	90	9.3	8.1-11	N.R.	00160747, Surprenant, 1986, Acceptable
Naled	Eastern Oyster <i>Crassostrea virginica</i>	Flow-thru	90	190	110-290	N.R.	00160748, Surprenant, 1986, Acceptable
Naled	Eastern Oyster	Flow-thru	59.6	91	76-110	1.43	42751101, Dionne 1993,

Chemical	Species Name	Type	a.i.	96 Hr LC50 (ppb)	CL	Curve slope	MRID, Author, Year, and Study Classification
Dibrom 8EC	<i>Crassostrea virginica</i>						Acceptable

N.R. = Not reported

TABLE 6. Acute Estuarine/Marine Fish & Invertebrate Toxicity Study Results for DDVP

Chemical	Species Name	Type	a.i.	ppm (as DDVP)	ppm (as Naled)	CL	Curve slope	MRID, Author, Year, and Study Classification
DDVP	Sheepshead minnow <i>Cyprinodon variegatus</i>	Flow-thru	90	7.35 mean-measured	12.7	5.4-8.7	N.R.	43571403, Jones & Davis 1994, Acceptable
DDVP	Eastern Oyster <i>Crassostrea virginica</i>	Flow-thru	98	89.1	153	77.8-106	2.78	43571404, Jones & Davis 1995, Acceptable
DDVP	Mysid <i>Americamysis bahia</i>	Flow-thru	98	19.1	32.9	12.7-32.5	N.R.	43571405, Jones & Davis 1994, Acceptable

N.R. = Not reported

TABLE 7. Chronic Toxicity Study Results for Fish, both Fresh and Saltwater, for DDVP and Naled (Flow-through)

Chemical	Species Name	a.i.	Study Time	LOAEC (ppb) as DDVP	LOAEC (ppb) as naled	Curve slope	NOAEL (ppb) as DDVP	NOAEL (ppb) as naled	MRID, Author, Year, and Study Classification
Dichlorvos	Sheepshead minnow <i>Cyprinodon variegatus</i>	98	34 D	1840	3170	N.A.	960	1654	43590401, Jones & Davis 1995, Acceptable
Dichlorvos	Rainbow trout <i>Oncorhynchus mykiss</i>	98	61 D	10.1	17.4	N.A.	5.2	8.96	43788001, Davis 1995 Acceptable
Naled	Fathead minnow <i>Pimephales promelas</i>	94.4	35 D	----	6.3		----	2.9	42602201, Bettencourt 1993, Acceptable

N.A. = Not applicable

TABLE 8. Aquatic Invertebrate Chronic Toxicity Study Results for DDVP and Naled (Flow-through)

Chemical	Species Name	AI	Study Time	LOAEC (ppb) as DDVP	LOAEC (ppb) as naled	Curve Slope	NOAEL (ppb) as DDVP	NOAEL (ppb) as naled	MRID, Author, Year, and Study Classification
Dichlorvos	Mysid <i>Americamysis bahia</i>	98	28 D	3.25	5.6	N.A.	1.48	2.55	43854301, Ward & Davis 1996, Acceptable

Chemical	Species Name	AI	Study Time	LOAEC (ppb) as DDVP	LOAEC (ppb) as naled	Curve Slope	NOAEL (ppb) as DDVP	NOAEL (ppb) as naled	MRID, Author, Year, and Study Classification
Dichlorvos	Water flea <i>Daphnia magna</i>	98	21D	0.0122	0.021	N.A.	0.0058	0.01	43890301, Ward & Davis 1995, Acceptable
Naled	Mysid <i>Americamysis bahia</i>	89.2	31 D	----	0.2	N.A	----	<0.2	45031701, Sousa 2000, Supplemental
Naled	Water flea <i>Daphnia magna</i>	97.3	21 D	----	0.098	N.A.	----	0.045	42908801, Putt 1993, Acceptable

N.R. = Not reported

TABLE 9. Aquatic Plant Toxicity Study Results, for DDVP and Naled (Static)

CHEMICAL	COMMON NAME	AI	STUDY TIME	EC50 (ppm)	ppb (as DDVP)	ppb (as Naled)	CL	CURVE SLOPE	NOEL (ppb)	MRID, Author, Year, and Study Classification
Dichlorvos	Algae <i>Isochrysis galbana</i>	98	48 hr	14	14000	24125	N.R.	N.R.	N.R.	40228401, Mayer 1986, Supplemental
Dichlorvos	Green algae <i>Dunaliella tertiolecta</i>	98	48 hr	>100	>10000	>172323	N.R.	N.R.	N.R.	40228401, Mayer 1986, Supplemental
Dichlorvos	Marine diatom <i>Skeletonema costatum</i>	98	48 hr	28	28000	48251	N.R.	N.R.	N.R.	40228401, Mayer 1986, Supplemental
Dichlorvos	Marine diatom <i>Thalassiosira pseudonana</i>	98	48 hr	17	17000	29295	N.R.	N.R.	N.R.	40228401, Mayer 1986, Supplemental
Naled	Bluegreen algae <i>Anabaena flos-aquae</i>	94.4	5 D	0.91	----	91	15-7400	N.R.	57	42529604, Hoberg 1992, Acceptable
Naled	Duckweed <i>Lemna gibba</i>	94.4	14 D	>1.8	----	> 1800	N.R.	N.R.	<1800	42529601, Hoberg 1992, Supplemental
Naled	Freshwater diatom <i>Navicula pelliculosa</i>	94.4	5 D	0.024	----	24	10-70	N.R.	42	42529603, Hoberg 1992, Acceptable
Naled	Green algae <i>Selenastrum capricornutum</i>	94.4	5 D	0.04	----	40	13-100	N.R.	N.R.	42529605, Hoberg 1992, Acceptable
Naled	Marine diatom <i>Skeletonema costatum</i>	94.4	5 D	0.05	----	50	0.024-0.10	N.R.	6.3	42529602, Hoberg 1992, Acceptable

N.R. = Not reported

TABLE 10. Avian Acute and Sub-Acute Toxicity Study Results for DDVP

Chemical	Species Name	Age	Type	a.i.	Study Time	LC50 (Dietary) Or LD50 (Oral) as DDVP	LC50 (Dietary) Or LD50 (Oral) as Naled	Toxlevel	CI	Slope	NOAEL	MRID, Author, Year, and Study Classification
DDVP	Japanese quail <i>Coturnix japonica</i>	14 D	Dietary	94.8	8 D	298	513.52	PPM	257-345	6.5	N.R.	00022923, Hill et al. 1975, Supplemental
DDVP	Mallard duck <i>Anas platyrhynchos</i>	5 D	Dietary	94.8	8 D	1317	2269.5	PPM	1043-167	2.3	N.R.	00022923, Hill et al. 1975, Acceptable
DDVP	Mallard duck <i>Anas platyrhynchos</i>	16 D	Dietary	94.8	8 D	>5000	>8616.2	PPM	N.A.	N.R.	<1250	00022923, Hill et al. 1975, Supplemental
DDVP	Ring-necked pheasant <i>Phasianus colchicus</i>	10 D	Dietary	94.8	8 D	568	978	PPM	473-673	5.5	N.R.	00022923, Hill et al. 1975, Acceptable
DDVP	Bobwhite quail <i>Colinus virginianus</i>	N.R.	Dietary	0.46	8 D	>4640	>7995.8	PPM	N.R.	N.R.	N.R.	ACC232017 Supplemental
DDVP	Bobwhite quail <i>Colinus virginianus</i>	17 WKS	Oral	96.5	14 D	8.8	15.16	MGK	6.2-13.4	3.69	1.0	40818301, Grimes & Jaber 1988, Acceptable
DDVP	Mallard duck <i>Anas platyrhynchos</i>	5 MOS	Oral	93	14 D	7.8	13.44	MGK	6-10.1	N.R.	N.R.	00160000, Hudson et al 1984, Supplemental
DDVP	Mallard duck <i>Anas platyrhynchos</i>	N.R.	Oral	.46	14 D	>4650	>8013	MGK	N.R.	N.R.	4650	ACC232017 Acceptable
DDVP	Ring-necked pheasant <i>Phasianus colchicus</i>	3 MOS	Oral	93	14 D	11.3	19.47	MGK	9-14.3	N.R.	N.R.	HCOSTA01 Supplemental

N.R. = Not reported

TABLE 11. Avian Acute and Sub-Acute Toxicity Study Results, for Naled

CHEMICAL	COMMONNAME	AGE	TYPE	AI	STUDY TIME	LC50 -Dietary LC50 (ppm) / OR LD50- oral (MGK)	CL	SLOPE	MRID and Study Classification
Naled	Bobwhite quail <i>Colinus virginianus</i>	14 D	Dietary	95	8 D	2117	1.5-2.9	N.R.	00022923, Hill et al. 1975, Acceptable
Naled	Japanese quail <i>Coturnix japonica</i>	17 D	Dietary	95	8 D	1327	1178-149	N.R.	00022923, Hill et al. 1975, Supplemental
Naled	Mallard duck <i>Anas platyrhynchos</i>	10 D	Dietary	95	8 D	2724	1068-150	8.9	00022923, Hill et al. 1975, Acceptable
Naled	Ring-necked pheasant <i>Phasianus colchicus</i>	10 D	Dietary	95	8 D	2538	2221-289	6	00022923, Hill et al. 1975, Acceptable
Naled	Canada goose <i>Branta canadensis</i>	N.R.	Oral	93	14 D	36.9	27.2-50	N.R.	00160000, Hudson et al. 1984, Supplemental
Naled	Mallard duck <i>Anas platyrhynchos</i>	N.R.	Oral	93	14 D	52.2	37.8-72	N.R.	00160000, Hudson et al. 1984, Acceptable
Naled	Sharp-tailed grouse <i>Tympanuchus phasianellus</i>	Adult	Oral	93	14 D	64.9	37.3-111	N.R.	00160000, Hudson et al. 1984, Supplemental

N.R. = Not reported

For Northern bobwhite, there were no overt signs of toxicity in any of the remaining treatment levels (130, 260, and 520 ppm a.i.) throughout the test. There were, however, treatment related reductions in adult male body weight and feed consumption (first two weeks) at the 520 ppm a.i. level, when compared to control. These results indicate a reduction in “feed consumption that may have been related to palatability or chemically induced anorexia.” When compared to the control, there were no statistically significant effects on any reproductive parameter measured at any test concentration. Although not statistically significant, there was a slight reduction from the control (mean=46, sd 19) in egg production at the 520 ppm a.i.test concentration (mean=38, sd 11) that, according to the authors, appeared to be treatment related.

The highest toxicity level tested (1560 ppm ai) resulted in overt signs of toxicity starting on Week 2, resulting in a diet was subsequently replaced with control diet on Day 2 of Week 2. Signs of toxicity included loss of coordination, lethargy, wing droop and ruffled appearance. Two out of the three mortalities found in this group were considered treatment related.

TABLE 12. Avian Reproduction Toxicity Study Results for Naled

CHEMICAL	COMMONNAME	AI	STUDYTIME	LOAEL (ppm)	NOAEL	MRID, Author, Year, and Study Classification
Naled	Bobwhite quail <i>Colinus virginianus</i>	90.6	22WKS	520	260	44517901, Frey et al. 1998, Acceptable
Naled	Mallard duck <i>Anas platyrhynchos</i>	90.6	22WKS	>520	260	44517902, Frey et al. 1998, Acceptable

TABLE 13. Avian Reproduction Toxicity Study Results, for DDVP

CHEMICAL	COMMONNAME	AI	STUDYTIME	LOAEL (ppm) as DDVP	LOAEL ppm (as naled)	NOAEL (ppm) as DDVP	NOAEL ppm (as naled)	MRID, Author, Year, and Study Classification
Dichlorvos	Bobwhite quail <i>Colinus virginianus</i>	98	20WKS	100	172.32	30	51.7	43981701, Cameron 1996, Acceptable
Dichlorvos	Bobwhite quail <i>Colinus virginianus</i>	0.46	1 Gen	>20	34.46	20	34.46	ACC229323 Supplemental
Dichlorvos	Mallard duck <i>Anas platyrhynchos</i>	98	22WKS	12	20.68	<12	<20.68	43981702, Cameron 1996, Supplemental
Dichlorvos	Mallard duck <i>Anas platyrhynchos</i>	98	20WKS	15	25.85	5	8.62	44233401, Redgrave & Mansell 1997, Acceptable
Dichlorvos	Mallard duck <i>Anas platyrhynchos</i>	0.46	1 Gen	2	3.45	<2	<3.45	ACC232017 Supplemental

Table 14. Naled and DDVP Toxicity to Honey Bees

CHEMICAL	COMMON NAME	TAXONOMIC	AGE	TYPE	AI	STUDY TIME	LD50 as DDVP	LD50 as naled	TOX LEVEL	Slope	NOAEL	MRID, Author, Year, and Study Classification
Naled	Honey bee	<i>Apis mellifera</i>	NR	C	Tech	48 hr	----	0.48	UGB	18.18	<0.48	00036935, Atkins et al. 1975, Acceptable
DDVP	Honey bee	<i>Apis mellifera</i>	Adult	C	Tech	48 hr	0.495	0.85	UGB	8.97	N.R.	00036935, Atkins et al. 1975, Acceptable

Table 15. Naled & DDVP Acute Toxicity to Mammals

CHEMICAL	COMMON NAME	LD50	LD50 as naled	Tox Level	MRID, Author, Year, and Study Classification
Naled	Rat	92 (F) & 191 (M) – carboxymethyl cellulose carrier	----	MGK	00142660, Cerkanowicz 1984, Acceptable
Naled	Rat	230 (F) & 325 (M) – corn oil vehicle	----	MGK	
Naled	Mule Deer <i>Odocoileus hemionus</i>	14D LD50 = 200		MGK	00160000, Hudson et al. 1975, Supplemental
DDVP	Rat	56 (F) & 80 (M) (DDVP)	96.5 (F) & 137.9 (M)	MGK	00005467, Gaines 1960, Acceptable

Table 16. Naled & DDVP Chronic Toxicity to Rats

CHEMICAL	COMMON NAME	NOAEC	LOAEC	NOAEC (as naled)	LOAEC (as naled)	MRID, Author, Year, and Study Classification
Naled	Rat	6mg/kg-day (parental systemic effects); 18 mg/kg-day (reproductive toxicity)	18 mg/kg	----	----	00146498, Schroeder 1985, Acceptable
DDVP	Rat	NOAEC = 2.3 mg/kg/day = 20 ppm (DDVP)	8.3 mg/kg/day	4.0 mg/kg/day = 34.5 ppm	14.3 mg/kg/day	42483901, Tyl et al. 1992, Acceptable