

US EPA ARCHIVE DOCUMENT

Table 1. Recommended Application Rates and Application Periods of Chlorfenapyr Formulations¹

Pest	PIRATE (lbs a.i./acre)	PIRATE Application Number and Interval	ALERT (lbs a.i./acre)	ALERT Application Number and Interval	Remarks
Mites (incl. Two-spotted, carmine, Pacific, and strawberry)	0.15	Maximum 3 applications @ 5-7 day interval	0.075 Cotton height <12"	Maximum 6* applications @ 5-7 day interval	Use adequate spray volume to insure thorough coverage. For best results, treat when pest populations are in early stages of development.
	0.20	Maximum 2 applications @ 5-7 day interval	0.15 Cotton height <12"	Maximum 3* applications @ 5-7 day interval	
			0.15 Cotton height >12"	Maximum 3* applications @ 5-7 day interval	
			0.25 Cotton height >12"	Maximum 2 applications @ 5-7 day interval	
Beet armyworm	0.2	Maximum 2 applications @ 5-7 day interval	0.2	Maximum 2 applications @ 5-7 day interval	Apply according to local economic thresholds such as 5 active "hits" per 100 row feet
Tobacco budworm, cotton bollworm	0.2-0.25	Maximum 2 applications @ 5-7 day interval	0.2-0.25	Maximum 2 applications @ 5-7 day interval	Rates of 0.2 to 0.25 lbs/acre should be used only in tank mixture combinations with larvicides approved for use on cotton at their recommended label rates. When cotton bollworm is the predominant species, pyrethroid combinations are recommended.
	0.3	Maximum single annual application	0.3	Maximum single annual application	Rate of 0.3 lbs/acre has been shown to be effective when used alone. Apply on a 5 to 7 day schedule or as determined by field scouting

¹ Pirate used in states east of the Rocky Mountains, ALERT used west of the Rocky Mountains

*These maximum number of applications are consistent with the confining maximum annual application of 0.5 lb ai/A. However, the proposed label for ALERT indicates that actual consecutive applications be limited to two applications.

Table 2. Weed Seed Head and Weed Seed Residues of Chlorfenapyr from Treated Fields for 0.35, 0.18, 0.035, and 0.01 lb/ai/application Treatment Rates for Three Treatments (MRID 444526-08)

Weed Seed Head Residues (mg/kg fresh weight)					
Treatment	Days After First Application	0.35 lb ai/A/application	0.18 lb ai/A/application	0.035 lb ai/A/application	0.01 lb ai/A/application
Treatment 1	0.1	27.2*	11.4	1.7	0.38
	3	11.1	4.0	0.81	0.25
	7	10.8	3.02	0.38	0.15
Treatment 2	7.1	32.7	17.4 (17.2, 17.6)	2.36	0.52
	10	24.6	12.7	1.34 (1.34, 1.34)	0.41
	14	19.5 (19.3, 19.7)**	7.71	0.9	0.3 (0.287, 0.386)
Treatment 3	14.1	36.5	7.99	2.52	0.64
	15	42.4 (41.9, 42.9)	16.3	1.79	0.76 (0.733, 0.795)
	17	22.2	13.05	1.22	0.51
	21	17.7	6.92 (6.36, 7.48, 5.46)	0.86 (0.839, 0.873)	0.31 (0.296, 0.331)
	24	9.5 (7.95, 10.1, 10.5)	5.63 (5.46, 5.80)	0.71 (0.691, 0.692, 0.735)	0.26 (0.295, 0.217)
	28	16.0 (13.5, 13.7, 20.9)	5.12 (5.34, 4.89)	0.78 (0.772, 0.784)	0.31 (0.305, 0.326, 0.301)
	35	6.32	1.93 (1.98, 1.88, 1.98)	0.47	0.18
	42	5.79	1.85	0.44 (0.435, 0.435)	0.17
Weed Seed Residues by Treatment 3 (mg/kg fresh weight)					
Species	0.35 lb ai/A/application	0.18 lb ai/A/application	0.035 lb ai/A/application	0.01 lb ai/A/application	
browntop millet	14.2	5.7	1.15 (1.11, 1.19)	0.32	
crabgrass	110 (105, 115)	44 (44.2, 43.7)	3.98	1.08	
foxtail	12.4	5.7 (5.59, 5.80)	0.95	0.32	
goosegrass/ smartweed	32.6 (37.0, 28.2)	18.4 (19.5, 17.2)	2.66	0.86	
maximum	110	44	3.98	1.08	
average	42.3	18.5	3.11	0.65	

* All values without parenthetical entries are for a single analysis of one field sample

**Average of multiple chemical analyses of a single field sample, values in parenthesis are measured values contributing to the average

Table 3. Chlorfenapyr residues in Adult and Larval Beet Armyworms (MRID444642-01)

Armyworm Life Stage	Days After Treatment	Residues for 0.2 lb ai/A (mg/kg)	Residues for 0.35 lb ai/A (mg/kg)
Adults	0.1	0.573, 4.23, 7.96	3.12, 4.23
	7	<0.05, 0.0655	<0.05, <0.05, <0.05
	14	<0.05, <0.05, 0.452	<0.05, 0.112, 0.249
	21	0.195, 0.451, 0.532	0.647, 0.704, 1.84
	28	0.107, 0.277, 0.652	<0.05, <0.05, 0.152
Larvae	0.1	0.152, 0.298, 0.585, 0.831, 1.13, 1.87	0.565, 1.0, 1.25, 3.21, 3.24
	1	0.0551, 0.0995, 0.644, 1.46	0.2, 1.55, 1.92, 2.08, 4.34
	3	0.28, 0.351, 0.543	0.565, 1.12, 1.38
	4	0.353, 0.453, 0.583	0.804, 1.23, 1.59
	7	0.0796, 0.1748, 0.179	0.176, 0.321, 0.352
	14	0.0799, 0.0873, 0.127	<0.05, <0.05, <0.05
	21	<0.05, <0.05, 0.0551	<0.05, <0.05, <0.05
	28	<0.05, <0.05, <0.05	<0.05, <0.05, <0.05

Numbers in **bold** represent the maximum values per sample period as used in the exposure assessment

Table 4. Chlorfenapyr Residues in Cotton (MRID444642-01)

Days After Treatment	Mean Residues for 0.2 lb ai/A (mg/kg)	Mean Residues for 0.35 lb ai/A (mg/kg)
0.1	45.9 (SD 26.7, n=2)	60.5 (15.3, n=2)
1	14.3 (n=1)	30.6 (n=1)
3	7.00 (SD 2.52, n=3)	15.02 (SD 4.69, n=4)
4	4.59 (SD 0.88, n=4)	16.1 (SD 7.09, n=3)
7	1.50 (SD 0.99, n=5)	3.28 (SD 3.52, n=5)
14	0.68 (SD 0.18, n=5)	0.73 (SD 0.42, n=5)
21	0.44 (SD 0.22, n=5)	0.76 (SD 0.59, n=5)
28	0.50 (SD 0.01, n=5)	0.76 (SD 0.36, n=2)

All values calculated conservatively assuming samples reported below LOQ are equivalent to LOQ (0.05 mg/kg)

Table 5. Acute Oral Toxicity to Avian Species (Parent Chlorfenapyr)

Species	% A.I.	End Point (mg ai/kg)	Toxicity Category	MRID No. Author/Year	Study Classification
Northern Bobwhite (<i>Colinus virginianus</i>)	94.5	LD ₅₀ = 34 NOEL (Wt., Feed) = 2	Highly Toxic	427702-28 Helsten, 1993	Core
Mallard (<i>Anas platyrhynchos</i>)	94.5	LD ₅₀ = 8.3 NOEL (Wt., Feed) = 1	Very Highly Toxic	427702-27 Helsten, 1993	Core
Red-winged Blackbird (<i>Agelaius phoeniceus</i>)	94.5	LD ₅₀ = 2.21 NOEL (Wt.)= 0.63	Very Highly Toxic	438870-04 Brewer, 1995	Supplemental*

* Not a required study.

Table 6. Acute Oral Toxicity of Four Environmental Metabolites

Metabolite	Species	% A.I.	LD ₅₀ (mg ai/kg)	Toxicity Category	MRID No. Author/Year	Study Classification
AC 303,268	Northern Bobwhite (<i>Colinus virginianus</i>)	100.3	LD ₅₀ = 25 NOEL (wt.) = 3	Highly Toxic	434928-09 Campbell, 1993	Supplemental
	Mallard (<i>Anas platyrhynchos</i>)	100.3	LD ₅₀ = 77 NOEL (wt.) = 20	Moderately Toxic	434928-08 Campbell, 1993	Supplemental
AC 312,094	Northern Bobwhite (<i>Colinus virginianus</i>)	96.3	LD ₅₀ = 1685 NOEL (wt.) = 160	Slightly Toxic	438870-06 Brewer, 1995	Supplemental
	Mallard (<i>Anas platyrhynchos</i>)	96.3	LD ₅₀ = >2400 NOEL = >2400	Practically non-toxic	438870-05 Brewer, 1995	Supplemental
CL 303,267	Northern Bobwhite (<i>Colinus virginianus</i>)	98.1	LD ₅₀ = >2250 NOEL (wt.) = 1350	Practically non-toxic	444526-11 Gagne et al., 1997a	Supplemental
	Mallard (<i>Anas platyrhynchos</i>)	98.1	LD ₅₀ = >2250 NOEL = 2250	Practically non-toxic	444526-12 Gagne et al., 1997b	Supplemental
CL 325,195	Northern Bobwhite (<i>Colinus virginianus</i>)	97.0	LD ₅₀ = 741 NOEL = 192	Slightly Toxic	444526-11 Gagne et al., 1997a	Supplemental
	Mallard (<i>Anas platyrhynchos</i>)	97.0	LD ₅₀ = >2250 NOEL (wt.) = 2250	Practically non-toxic	444526-12 Gagne et al., 1997b	Supplemental

Table 7. Avian Subacute Dietary Toxicity Studies with Parent Chlorfenapyr

Species	% A.I.	End Point (mg/kg diet)	Toxicity Category	MRID No. Author/Year	Study Classification
Northern Bobwhite (<i>Colinus virginianus</i>)	94.5	LC ₅₀ = 132 NOEL = 10 (clinical signs)	Highly Toxic	427702-30 Gagne, 1993	Core
Mallard (<i>Anas platyrhynchos</i>)	94.5	LC ₅₀ = 8.6 NOEL (wt.) = <4	Very Highly Toxic	427702-29 Gagne, 1993	Core
Red-winged Blackbird (<i>Agelaius phoeniceus</i>)	94.9	LC ₅₀ = 10.75 NOEL (mort.) = 6.93	Very Highly Toxic	444526-13 Gagne et al., 1997c	Supplemental *

* Not a required study.

Table 8. Chronic Avian Toxicity Studies (Reproduction) with Parent Chlorfenapyr

Species	% A.I.	NOEC/LOEC (mg/kg diet)	Endpoints Affected	MRID No. Author/Year	Study Classification
Northern Bobwhite (<i>Colinus virginianus</i>)	94.5	NOEL = 0.5 LOEL = 1.5	14 day survivors at 4.5 mg/kg hatchling weight at 1.5 mg/kg	434928-11 Bryan/1994	Supplemental
Mallard (<i>Anas platyrhynchos</i>)	94.5	NOEL = 0.5 LOEL = 1.5	adult female body weight at 1.5 mg/kg food consumption at 1.5 mg/kg reproductive parameters at 2.5 mg/kg	434928-13 Helsten/1994	Core

Table 9. Mammalian Toxicity Tests conducted with Technical Chlorfenapyr and Formulations 2SC (ALERT) and 3SC (PIRATE) and Select Metabolites

Species	% A.I.	Test Type	Endpoint	Toxicity Category	MRID No.
AC 303,630 Technical					
Rat	94.5	Acute Oral Toxicity (Technical)	LD ₅₀ (males) = 441 mg/kg LD ₅₀ (females) = 1152 mg/kg LD ₅₀ (both) = 626 mg/kg	Moderately to Slightly Toxic	427702-07 427702-01
Mouse	94.5	Acute Oral Toxicity (Technical)	LD ₅₀ (males) = 45 mg/kg LD ₅₀ (females) = 78 mg/kg LD ₅₀ (both) = 55 mg/kg	Highly to Moderately Toxic	434928-28
Mouse	94.5	Sub-chronic Feeding - 3 month	NOEL = 40 ppm (7.1 mg/kg/day) LOEL = 80 ppm (14.8 mg/kg/day)	n/a	434928-30
Rat	94.5	Sub-chronic Feeding - 3 month	NOEL = 300 ppm (21 mg/kg/day) LOEL = 600 ppm (48.4 mg/kg/day)	n/a	427702-19
Rat	94.5	2 Generation Reproduction	Systemic Toxicity NOEL = 60 ppm (5 mg ai/kg/day) LOEL = 300 ppm (22 mg ai/kg/day) Reproductive Toxicity NOEL = 60 ppm (5 mg ai/kg/day) LOEL = 300 ppm (22 mg ai/kg/day)	n/a	434928-36
AC 303,630 Formulations 2SC (ALERT) and 3SC (PIRATE)					
Rat	21.44	Acute Oral Toxicity (AC 303,630 2SC)	LD ₅₀ (males) = 560 mg/kg LD ₅₀ (females) = 567 mg/kg	Slightly Toxic	432682-04
Rat	33.3	Acute Oral Toxicity (AC 303,630 3SC)	LD ₅₀ (males) = 283 mg/kg LD ₅₀ (females) = 999 mg/kg LD ₅₀ (both) = 626 mg/kg	Moderately to Slightly Toxic	427702-14
Metabolites					
Rat	100.3	Acute Oral Toxicity (AC 303,268)	LD ₅₀ (males) = 27.0 mg/kg LD ₅₀ (females) = 29.4 mg/kg LD ₅₀ (both) = 28.7 mg/kg	Highly Toxic	434928-24
Rat	96.3	Acute Oral Toxicity (AC 303,094)	LD ₅₀ (males) = >5000 mg/kg LD ₅₀ (females) = >5000 mg/kg LD ₅₀ (both) = >5000 mg/kg	Practically Non-toxic	434928-25
Rat	89.0	Acute Oral Toxicity (AC 312,250)	LD ₅₀ (males) = >5000 mg/kg LD ₅₀ (females) = 2500 mg/kg	Practically Non-toxic	434928-26
Rat	89.0	Acute Oral Toxicity (AC 325,195)	LD ₅₀ (males) = 776 mg/kg LD ₅₀ (females) = 1367 mg/kg	Slightly Toxic	434928-27

Table 10. Nontarget insect acute contact toxicity of Technical Chlorfenapyr and AC 303,630 3SC (PIRATE™)

Species	% A.I.	End Point	Toxicity Category	MRID No. Author/Year	Study Classification
Acute Contact Toxicity Honey Bee (<i>Apis mellifera</i>)	94.5	LD ₅₀ = 0.12 ug/bee	Highly Toxic	427702-33 Kirkland/1994	Core
Acute Foliar Toxicity Honey Bee (<i>Apis mellifera</i>)	33.3	No significant mortality at 0.34 and 0.43 lbs ai/acre	n/a	434928-45	Core

Table 11. Nontarget Soil Organism Toxicity of Technical Chlorfenapyr and AC 303,630 3SC (PIRATE™)

Species	Product % A.I.	End Point	MRID No. Author/Year	Study Classification
Acute Toxicity Earthworm (<i>Eisenia fetida</i>)	Technical 94.5 %	LC ₅₀ = ≤22 ppm NOEL (wt) = 8.4 ppm	434928-07 England/1994	Supplemental*
Sublethal Toxicity Earthworm (<i>Eisenia fetida</i>)	AC 303,630 3SC 30.3 %	No adult mortality, adult body weight or reproductive effects at 0.26 and 1.3 lbs ai/acre.	438870-10 Canez/1995	Supplemental*

* Not required studies.

Table 12. Terrestrial Field Studies

Species	Formulation	End Point	MRID No. Author/Year	Study Classification
Food Choice Study Northern Bobwhite (<i>Colinus virginianus</i>)	Technical (94.5% ai)	NOEL - Adult Testing Survival = 250 ppm Weight = 250 ppm Food Consumption = 250 ppm NOEL - Juvenile Testing Survival = 140 ppm Weight = 140 ppm Food Consumption = 70 ppm	438870-07 Fairbrother 1995	Supplemental
Simulated Field(pen) Study Northern Bobwhite (<i>Colinus virginianus</i>)	AC 303,630 3SC (33.3% ai)	No mortality or morbidity at an application rate of 0.35 lb ai/acre. However, flawed study design limits usefulness of the data.	438870-07 434928-14 Ahmed/1995	Supplemental
Dermal Toxicity Northern Bobwhite (<i>Colinus virginianus</i>)	AC 303,630 3SC (33.3% ai)	No mortality or morbidity at an 1.4 lbs ai/acre. Study design limits interpretation to contact exposure to chemical after drying.	438870-07 434928-14 Driver/1995	Supplemental
Single application foliar residue and ecotoxicological study	AC 303,630 3SC (33.3% ai)	At 0.2 and 0.4 lbs ai/acre residues on cotton leaf 127% and 183% of Fletcher value. By day 28 residues on cotton leaf about 3 ppm. Residues in seeds collected from weeds in adjacent field border were below the method detection limit. Residues in live insects collected in the cotton field and in adjacent habitat had mean residue concentrations of 5.7 ppm through day 2 and below MDL, respectively.	434928-14 Sullivan/1994	Supplemental
Avian Census of Cottonfield Habitat	No active ingredient	Good preliminary census in preparation for a full-blown field study.	434928-14 Gagne/1995	Supplemental
Avian Census of Cottonfields in Arizona, Texas, Mississippi, and Alabama	No active ingredient	Protocol would essentially repeat the above mentioned study.	444642-02 Gagne/1998	Preliminary Review
Avian field study to Assess the potential for Acute Effects	AC 303,630 3SC (33.3% ai)	Study Under Review	444526-16 Gagne et al./ 1995	Undr review

Table 13. Five Most Common Avian Species Observed During the 1993 Census of Cotton Fields and Adjacent Habitats (mean number observed per sampling period)

Arizona 51 total species	Texas 62 total species	Mississippi/Alabama 66 total species
Red-winged Blackbird (10.62)	Horned Lark (1.13)	Northern Cardinal (2.67)
Yellow-headed Blackbird (4.60)	Cliff Swallow (1.04)	Red-winged Blackbird (1.96)
Cliff Swallow (1.57)	Northern Mockingbird (0.84)	Horned Lark (1.73)
Abert's Towhee (1.29)	Red-winged Blackbird (0.63)	Indigo Bunting (1.66)
Gambel's Quail (1.25)	Lark Sparrow (0.60)	Blue Jay (1.08)

Table 14. Freshwater Fish Acute Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Rainbow trout	94.5	LC ₅₀ = 7.44	427702-31, 1991	Very Highly Toxic	Yes
Bluegill sunfish	94.5	LC ₅₀ = 11.6	428078-01, 1991	Very Highly Toxic	Yes
Channel catfish	94.9	LC ₅₀ = 12.3	443648-01, 1996	Very Highly Toxic	Yes

Table 15. Freshwater Fish Acute Toxicity Findings for the Metabolite CL 312,094

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Bluegill sunfish	93.6	LC ₅₀ > 928	428078-15, Davis, J.W., Youngerman, Wisk, J.D, 1994	Highly Toxic	Yes

Table 16. Freshwater Fish Acute Toxicity Findings for the Metabolite CL 303,267

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Bluegill sunfish	97	LC ₅₀ = 70	444526-17, Olivieri, C.E., Ward, T.J., Magazu, J.P., Boeri, R.L., 1997	Very Highly Toxic	No

Table 17. Freshwater Fish Acute Toxicity Findings for the Metabolite CL 325,195

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Bluegill sunfish	97	LC ₅₀ = 2,100	444526-17, Olivieri, C.E., Ward, T.J., Magazu, J.P., Boeri, R.L., 1997	Moderately Toxic	No

Table 18. Fish Early Life-Stage Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	NOEC/LO EC (ppb)	MATC (ppb)	MRID No. Author/Year	Endpoints Affected	Fulfills Guideline Requirement?
Rainbow trout	94.5	NOEC = 3.68 LOEC = 7.64	NA*	434928-19, Ward, G. Scott, McElwee, C., Lintott, D., Wisk, Joseph D., 1993	Survival of juvenile rainbow	Yes

*NA - not applicable, EFED risks to be based on NOEC when survival is the endpoint

Table 19. Freshwater Invertebrate Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	LC ₅₀ /EC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Daphnid <i>Daphnia magna</i>	94.5%	LC50 = 5.83	427702-32/1991	Very highly toxic	Yes

Table 20. Freshwater Invertebrate Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	LC ₅₀ / EC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Daphnid <i>Daphnia magna</i>	97%	LC ₅₀ = 18	438870-09, Davis, J.W., Dunham, H.R., Wisk, J.D., 1995.	Very highly toxic	Yes

Table 21. Freshwater Invertebrate Acute Toxicity Findings for the Metabolite CL 303,094

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
<i>Daphnia magna</i>	98	LC ₅₀ = 560	444526-18 Olivieri, C.E., Ward, T.J., Magazu, J.P., Boeri, R.L., 1997	Highly Toxic	No

Table 22. Freshwater Invertebrate Acute Toxicity Findings for the Metabolite CL 303,195

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
<i>Daphnia magna</i>	97	LC ₅₀ = 1700	444526-17, Olivieri, C.E., Ward, T.J., Magazu, J.P., Boeri, R.L., 1997	Moderately Toxic	No

Table 23. Freshwater Invertebrate Acute Toxicity Findings for the Metabolite CL 303,267

Species	% A.I.	LC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
<i>Daphnia magna</i>	98.1	LC ₅₀ = 107	444526-17, Olivieri, C.E., Ward, T.J., Magazu, J.P., Boeri, R.L., 1997	Highly Toxic	No

Table 24. Aquatic Invertebrate Life-Cycle Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	NOEC/LOEC (ppb)	MATC (ppb)	MRID No. Author/Year	Endpoints Affected	Fulfills Guideline Requirement ?
Daphnid <i>Daphnia magna</i>	94.3	NOEC = 3.57 LOEC = 7.7	NA*	434928-22, Davis, J.W., Wisk, J.D., 1994.	Survival, Reproduction, weight, and length	Yes

*NA - not applicable, EFED risks to be based on NOEC when survival is the endpoint

Table 25. Estuarine/Marine Acute Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	LC ₅₀ /EC ₅₀ (ppb)	MRID No. Author/Year	Toxicity Category	Fulfills Guideline Requirement?
Eastern Oyster shell deposition	-	-	-	-	No
Mysid shrimp	96.8	LC ₅₀ = 2.03	434928-18, Davis, J.W., Ward, 1994	Very highly toxic	Yes
Sheepshead minnow	94.5	LC ₅₀ = 60.2	434928-16, Ward, G.S., Wisk, J.D., 1993	Very highly toxic	Yes

Table 26. Estuarine/Marine Chronic Toxicity Findings (Parent Chlorfenapyr)

Species	% A.I.	NOEC/LOEC (ppb)	MATC (ppb)	MRID No. Author/Year	Endpoints Affected	Fulfills Guideline Requirement?
Mysid	94.5	NOEC= 0.172 LOEC= 0.385	NA*	434928-21, Ward, G. Scott, Wisk, Joseph D., Davis, Jay W., 1994.	Survival	May be up-graded to core upon submission of missing data.
Sheepshead Minnow	94.5	-	-	434928-20, McElwee, Cindy, Ward, G. Scott, and Wisk, Joseph D. 1994.	N/A	Invalid

*NA - not applicable, EFED risks to be based on NOEC when survival is the endpoint

Table 27. Acute Sediment Toxicity Tests (Parent Chlorfenapyr)

Species	% A.I.	LC ₅₀ / EC ₅₀ (mg/kg)	MRID No. Author/Year	Study Classification	Fulfills Guideline Requirement?
<i>Hyalloa azteca</i> (freshwater)	94.9%	LC ₅₀ = 19.6	444526-19, Hui (Jeff) Liu, Wisk, J.D., 1997.	Supplemental	Yes
<i>Leptocheirus plumulosus</i> (marine/estuarine)	>99%	LC ₅₀ = 0.18	445600-02, Hui (Jeff) Liu, Wisk, J.D., Olivieri C.E. 1998.	Preliminary Review	Determination pending

Sediment Total Organic Carbon (TOC) and moisture content were not reported for the *Hyalloa* test. These measurements are required for all sediment toxicity tests. If these measurements can be submitted this test could be upgraded to Core status.

Table 28. Chlorfenapyr Residues in Weed Seed Heads*

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Bollworm and Budworm	Mites	Mites	Armyworm	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites
Label application rate (lb ai/A)	0.25	0.2	0.2	0.15	0.2	0.075	0.15	0.25	0.3	0.25	0.2	0.15
Number of applications	2	2	2	3	2	6	3	2	1	2	2	3
Minimum label interval (days)	5	5	5	5	5	5	5	5	not applicable	5	5	5
Tested application rate (lb ai/A)	0.18	0.18	0.18	0.18	0.18	0.035	0.18	0.18	0.35	0.18	0.18	0.18
Tested interval (days)	7	7	7	7	7	7	7	7	7	7	7	7
Ratio of label to tested application rates	1.39	1.11	1.11	0.83	1.11	2.14	0.83	1.39	0.86	1.39	1.11	0.83
Days after first application	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
application 1	1.58E+01	1.27E+01	1.27E+01	9.46E+00	9.46E+00	3.64E+00	9.46E+00	1.58E+01	2.34E+01	1.58E+01	1.27E+01	9.46E+00
3	5.56E+00	4.44E+00	4.44E+00	3.32E+00	3.32E+00	1.73E+00	3.32E+00	5.56E+00	9.55E+00	5.56E+00	4.44E+00	3.32E+00
7	4.20E+00	3.35E+00	3.35E+00	2.51E+00	2.51E+00	8.10E-01	2.51E+00	4.20E+00	9.29E+00	4.20E+00	3.35E+00	2.51E+00
application 2	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
14	1.07E+01	8.56E+00	8.56E+00	6.40E+00	6.40E+00	1.93E+00	6.40E+00	1.07E+01	8.56E+00	1.07E+01	8.56E+00	6.40E+00
application 3 (if any)	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
21	--	--	--	6.63E+00	6.63E+00	5.39E+00	6.63E+00	--	--	--	--	6.63E+00
application 4 (if any)	21.1	21.1	21.1	5.74E+00	5.74E+00	1.84E+00	5.74E+00	--	--	--	--	5.74E+00
28	--	--	--	5.74E+00	5.74E+00	5.48E+00	5.74E+00	--	--	--	--	5.74E+00
	--	--	--	4.25E+00	4.25E+00	2.48E+00	4.25E+00	--	--	--	--	4.25E+00

*Residues are based on the in-field weed seed residues from MRID 444526-08, adjusting for differences in application rate by multiplying measured residues by the ratio of label rate to tested rate.

** -- indicates that the application scenario does not allow for a number of applications at or beyond this point.

Note: applications beyond 2 have been included because of inconsistencies in labelling language between Pirate and Alert regarding maximum number of applications

Data presented for time periods consistent with assessment periods from larval data

Table 29. Chlorfenapyr Residues in Insect Larvae*

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Mites	Bollworm and Budworm	Armyworm	Mites	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites
Label application rate (lb ai/A)	0.25	0.2	0.2	0.15	0.075	0.3	0.25	0.15	0.3	0.25	0.2	0.15
Number of applications	2	2	2	3	6	1	2	3	1	2	2	3
Tested application rate (lb ai/A)	0.2	0.2	0.2	0.2	0.2	0.35	0.2	0.2	0.35	0.2	0.2	0.2
Tested application interval (days)	7	7	7	7	7	not applicable	7	7	not applicable	7	7	7
Ratio of label to tested application rates	1.25	1	1	0.75	0.375	0.86	1.25	1	0.86	1.25	1	0.75
Days after first application	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)	Larval Insect (mg/kg)
application 1	2.34E+00	1.87E+00	1.87E+00	1.38E+00	7.00E-01	2.80E+00	2.34E+00	1.38E+00	2.80E+00	2.34E+00	1.87E+00	1.38E+00
3	6.80E-01	5.43E-01	5.43E-01	4.10E-01	2.00E-01	8.10E-01	6.80E-01	4.10E-01	8.10E-01	6.80E-01	5.43E-01	4.10E-01
7	2.20E-01	1.79E-01	1.79E-01	1.30E-01	7.00E-02	2.70E-01	2.20E-01	1.30E-01	2.70E-01	2.20E-01	1.79E-01	1.30E-01
application 2	2.56E+00	2.05E+00	2.05E+00	1.51E+00	7.70E-01	2.70E-01	2.20E-01	1.51E+00	2.70E-01	2.20E-01	2.05E+00	1.51E+00
14	3.80E-01	3.06E-01	3.06E-01	2.20E-01	1.20E-01	1.90E-01	3.80E-01	2.20E-01	1.90E-01	3.80E-01	3.06E-01	2.20E-01
application 3 (if any)	3.80E-01	3.06E-01	3.06E-01	1.60E+00	8.20E-01	1.90E-01	3.80E-01	1.60E+00	1.90E-01	3.80E-01	3.06E-01	1.60E+00
21	2.30E-01	1.82E-01	1.82E-01	2.60E-01	1.40E-01	8.00E-02	2.30E-01	2.60E-01	8.00E-02	2.30E-01	1.82E-01	2.60E-01
application 4 (if any)	2.30E-01	1.82E-01	1.82E-01	2.60E-01	8.40E-01	8.00E-02	2.30E-01	2.60E-01	8.00E-02	2.30E-01	1.82E-01	2.60E-01
28	7.00E-02	5.51E-02	5.51E-02	1.30E-01	1.40E-01	<7.00E-02	7.00E-02	1.40E-01	<7.00E-02	7.00E-02	5.51E-02	1.30E-01

* values are based on maximum measured values from MRID 444642-01 adjusted for differences between label rate and application rate used in residue study

values below detection limit assigned a value of 0.00 (note: this is not a conservative assumption)

-- denotes time periods for which extrapolation of available residue data are not reliable

Note: applications beyond 2 have been included because of inconsistencies in labelling language between Pirate and Alert regarding maximum number of applications

Table 30. Chlorfenapyr Residues in Cotton for Use as Forage Surrogate*

Region	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Mites	Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites	Mites
Label application rate (lb ai/A)	0.25	0.2	0.2	0.15	0.075	0.3	0.3	0.25	0.2	0.15	0.15
Number of applications	2	2	2	3	6	1	1	2	2	3	3
Tested application rate (lb ai/A)	0.2	0.2	0.2	0.2	0.2	0.35	0.35	0.2	0.2	0.2	0.2
Tested application interval (days)	7	7	7	7	7	not applicable	not applicable	7	7	7	7
Ratio of label to tested application rates	1.25	1	1	0.75	0.375	0.86	0.86	1.25	1	0.75	0.75
Days after first application	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)	Cotton leaf residue (mg/kg)
application 1	0.1	5.74E+01	4.59E+01	3.44E+01	1.72E+01	6.89E+01	6.89E+01	5.74E+01	4.59E+01	3.44E+01	3.44E+01
3	8.75E+00	7.00E+00	7.00E+00	5.25E+00	2.63E+00	1.05E+01	1.05E+01	8.75E+00	7.00E+00	5.25E+00	5.25E+00
7	1.88E+00	1.50E+00	1.50E+00	1.13E+00	5.63E-01	2.25E+00	2.25E+00	1.88E+00	1.50E+00	1.13E+00	1.13E+00
application 2	7.1	5.93E+01	4.74E+01	3.56E+01	1.78E+01	2.25E+00	2.25E+00	5.93E+01	4.74E+01	3.56E+01	3.56E+01
14	2.72E+00	2.18E+00	2.18E+00	1.64E+00	8.17E-01	1.02E+00	1.02E+00	2.72E+00	2.18E+00	1.64E+00	1.64E+00
application 3 (if any)	14.1	2.72E+00	2.18E+00	3.61E+01	1.80E+01	1.02E+00	1.02E+00	2.72E+00	2.18E+00	3.61E+01	3.61E+01
21	1.40E+00	1.12E+00	1.12E+00	1.97E+00	9.83E-01	6.63E-01	6.63E-01	1.40E+00	1.12E+00	1.97E+00	1.97E+00
application 4 (if any)	21.1	1.40E+00	1.12E+00	1.97E+00	1.82E+01	6.63E-01	6.63E-01	1.40E+00	1.12E+00	1.97E+00	1.97E+00
28	1.18E+00	9.46E-01	9.46E-01	1.22E+00	1.17E+00	7.55E-01	7.55E-01	1.18E+00	9.46E-01	1.22E+00	1.22E+00

* values are based on maximum measured values from MRID 444642-01 adjusted for differences between label rate and application rate used in residue study

values below detection limit assigned a value of 0.00 (note: this is not a conservative assumption)

-- denotes time periods for which extrapolation of available residue data are not reliable

Note: applications beyond 2 have been included because of inconsistencies in labelling language between Pirate and Alert regarding maximum number of applications

Table 31. Chlorfenapyr Residues in Soil (0-3 cm depth)

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Mites	Mites	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites and Armyworm	Mites	Mites
Label application rate (lb aI/A)	0.25	0.2	0.2	0.15	0.075	0.3	0.3	0.25	0.2	0.2	0.15	0.15
Number of applications	2	2	2	3	6	1	1	2	2	2	3	3
Application interval (days)	7	7	7	7	7	not applicable	not applicable	7	7	7	7	7
Days after first application	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg	soil residue mg/kg
application 1	0.1	5.53E-01	5.53E-01	4.15E-01	2.07E-01	8.30E-01	8.30E-01	6.91E-01	5.53E-01	5.53E-01	4.15E-01	4.15E-01
	3	6.88E-01	5.51E-01	4.13E-01	2.07E-01	8.26E-01	8.26E-01	6.88E-01	5.51E-01	5.51E-01	4.13E-01	4.13E-01
	7	6.84E-01	5.48E-01	4.11E-01	2.05E-01	8.21E-01	8.21E-01	6.84E-01	5.48E-01	5.48E-01	4.11E-01	4.11E-01
application 2	7.1	1.38E+00	1.10E+00	8.25E-01	4.13E-01	8.21E-01	8.21E-01	1.38E+00	1.10E+00	1.10E+00	8.25E-01	8.25E-01
	14	1.36E+00	1.09E+00	8.17E-01	4.09E-01	--	--	1.36E+00	1.09E+00	1.09E+00	8.17E-01	8.17E-01
application 3 (if any)	14.1	--	--	1.23E+00	6.16E-01	--	--	--	--	--	1.23E+00	1.23E+00
	21	--	--	1.22E+00	6.10E-01	--	--	--	--	--	1.22E+00	1.22E+00
application 4 (if any)	21.1	--	--	1.22E+00	8.17E-01	--	--	--	--	--	1.22E+00	1.22E+00
	28	--	--	1.21E+00	8.09E-01	--	--	--	--	--	1.21E+00	1.21E+00

Residues in soil assume a degradation half-life of 496 days and a soil density of 1.35 g/cc.

Residues are estimated to 28 days to be compatible with exposure period for weed seed and insect larvae residue data

-- indicates time periods for which other residue data cannot be predicted with reliability

Note: applications beyond 2 have been modelled because of inconsistencies in labelling language between Pirate and Alert regarding maximum number of applications

Table 32. Avian Dietary Parameters For Use in Exposure Assessment (wet weight basis)

Species	BW(g)	Free-Living Metabolic Rate* FMR = 2.123*BW** 0.749 (kcal/kg)	Bodyweight Normalized FMR FMR (kcal/g)	Proportion of Diet as Insect Matter insect P	Proportion of Diet as Seeds seed P	Proportion of Diet as Fruit fruit P	Insect P*ME (kcal/g)	seed P*ME (kcal/g)	fruit P*ME (kcal/g)	Avg ME (kcal/g)	NIR Total Bodyweight Normalized Total Intake Rate total NIR = FMR/Avg ME (g/g/day)	insect NIR = total NIR*insect P (g/g/day)	seed NIR = total NIR*seed P (g/g/day)	fruit NIR = total NIR*other P (g/g/day)
Carolina wren	21	2.08E-01	9.89E-01	9.40E-01	3.90E-02	3.90E-02	1.08E-00	1.04E-01	2.11E-02	1.21E-00	8.18E-01	7.69E-01	2.46E-02	2.46E-02
white-eyed vireo	11	1.28E-01	1.16E-00	9.90E-01	0.00E-00	1.00E-01	1.04E-00	0.00E+00	7.04E-02	1.11E-00	1.05E-00	9.45E-01	0.00E+00	1.05E-01
northern cardinal	45	3.67E-01	8.17E-01	7.10E-01	1.45E-01	1.45E-01	8.18E-01	5.04E-01	1.02E-01	1.42E-00	5.74E-01	4.07E-01	8.32E-02	8.32E-02
blue grosbeak	28	2.58E-01	9.20E-01	6.00E-01	4.00E-01	0.00E-00	6.91E-01	1.39E-00	0.00E-00	2.08E-00	4.42E-01	2.65E-01	1.77E-01	0.00E-00
morning dove	118	4.08E-01	3.46E-01	1.00E-02	9.90E-01	0.00E-00	1.15E-02	3.44E-00	0.00E-00	3.45E-00	1.00E-01	1.00E-03	9.93E-02	0.00E-00
red-winged blackbird	53	4.15E-01	7.84E-01	5.50E-01	4.50E-01	0.00E-00	6.34E-01	1.56E-00	0.00E-00	2.20E-00	3.57E-01	1.98E-01	1.61E-01	0.00E+00

Food Item	Gross Energy (kcal/g)	Assimilation Efficiency	ME: Metabolized Energy (kcal/g)
insect	1.6	7.20E-01	1.15E+00
seed	4.63	7.50E-01	3.47E+00
fruit	1.1	6.40E-01	7.04E-01

Species	BW(g)	insect NIR (g/g/day)	seed NIR (g/g/day)	fruit NIR (g/g/day)	Insect Ingestion (kg/d)	Seed Ingestion (kg/d)	Fruit Ingestion (kg/d)	Total Ingestion (kg/d)
Carolina wren	21	7.69E-01	2.46E-02	2.46E-02	1.62E-02	5.16E-04	5.16E-04	1.72E-02
white-eyed vireo	11	9.45E-01	0.00E-00	1.95E-01	1.04E-02	0.00E-00	1.16E-03	1.16E-02
northern cardinal	45	4.07E-01	8.32E-02	8.32E-02	1.83E-02	3.74E-03	3.74E-03	2.58E-02
blue grosbeak	28	2.65E-01	1.77E-01	0.00E-00	7.43E-03	4.95E-03	0.00E-00	1.24E-02
morning dove	118	1.00E-03	9.93E-02	0.00E+00	1.18E-04	1.17E-02	0.00E+00	1.18E-02
red-winged blackbird	53	1.96E-01	1.61E-01	0.00E+00	1.04E-02	8.51E-03	0.00E+00	1.89E-02

*Avian field metabolic rates as per Chapter 4 of Wildlife exposure factors handbook (EPA 1993) for passerine birds except morning dove

(a) morning dove FMR calculated as 1.146*Bw**0.749

Gross Energy for insects from average of beetles, grasshoppers, crickets (EPA 1993)

Gross Energy for seeds 5.1 dry weightX.907 (EPA 1993)

Gross Energy for fruit pulp and skin 1.1 (EPA 1993)

Assimilation Efficiency (AE) insect for birds consuming terrestrial insects 72% (EPA 1993)

AE seed for passerine birds consuming wild seeds 75% (EPA 1993)

AE fruit for birds consuming pulp and skin 64% (EPA 1993)

Body weights as per Dunning (1984)

Proportion of diet attributed to food items as per MRID 444779-01 literature search

Table 33. Mammalian Dietary Parameters For Use in Exposure Assessment

Species	BW(g)	Free-Living Metabolic Rate PMR = 2.514 * BW ^{0.507} (kcal)	Bodyweight Normalized PMR (kcal/g)	Proportion of Diet as Insect Matter	Proportion of Diet as Seeds	Proportion of Diet as Other Vegetation	Insect P-ME (kcal/g)	seed P-ME (kcal/g)	other plant P-ME (kcal/g)	Avg ME (kcal/g)	NIR Total Bodyweight Normalized Total Intake Rate total NIR = NFMR/Avg ME (g/g/day)	insect NIR = total NIR * insect P (g/g/day)	seed NIR = total NIR * seed P (g/g/day)	other NIR = total NIR * other P (g/g/day)
white-footed mouse	21	1.18E-01	5.60E-01	2.52E-01	2.59E-01	4.89E-01	3.51E-01	1.02E-00	2.82E-01	1.65E-00	3.39E-01	8.55E-02	8.78E-02	1.66E-01

Food Item	Gross Energy (kcal/g)	Assimilation Efficiency	Metabolized Energy (kcal/g)
insect	1.6	8.70E-01	1.39E-00
seed	4.63	8.50E-01	3.94E-00
other plant	0.76	7.60E-01	5.78E-01

Species	BW(g)	insect NIR (g/g/day)	seed NIR (g/g/day)	other plant NIR (g/g/day)	Insect (kg/d)	Seed (kg/d)	other plant (kg/d)	Total (kg/d)
white-footed mouse	21	8.55E-02	8.78E-02	1.66E-01	1.79E-03	1.84E-03	3.48E-03	7.12E-03

*Calculations as per Chapter 4 Wildlife Exposure Handbook (EPA 1993)

Gross Energy insect from average of beetles, grasshoppers, crickets (EPA 1993)

Gross Energy seed 5.1 dry weight X.907 (EPA 1993)

Gross Energy Energy other plant is 4.2 X (0.18) average of young grasses and dicot leaves (EPA 1993)

AE insect for rodents consuming terrestrial insects 87% (EPA 1993)

AE seed for rodents consuming seeds 85% (EPA 1993)

AE fruit for rodents consuming herbivory 76% (EPA 1993)

Bodyweight for species (EPA 1993)

Table 34. Carolina Wren Oral Exposure

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Mites	Mites	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites	Mites	Mites
Application rate (lb ai /A)	0.25	0.2	0.2	0.15	0.15	0.075	0.3	0.25	0.2	0.15		
Number of applications	2	2	2	3	6	1	not applicable	2	2	3		
Interval (days)	7	7	7	7	7	7	not applicable	7	7	7		
Days after first application	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	2.59	2.07	2.07	1.53	0.72	3.32	2.59	2.07	2.07	1.53		
3.0	0.81	0.64	0.64	0.49	0.24	1.11	0.81	0.64	0.64	0.49		
7.0	0.39	0.31	0.31	0.23	0.10	0.68	0.39	0.31	0.31	0.23		
7.1	3.18	2.54	2.54	1.88	0.85	--	1.38	2.54	2.54	1.88		
14.0	0.84	0.67	0.67	0.50	0.19	--	0.84	0.67	0.67	0.50		
14.1	--	--	--	1.58	0.91	--	--	--	--	1.58		
21.0	--	--	--	0.50	0.21	--	--	--	--	0.50		
21.1	--	--	--	0.50	0.93	--	--	--	--	0.50		
28.0	--	--	--	0.33	0.24	--	--	--	--	0.33		

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 35. White-Eyed Vireo Oral Exposure

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Bollworm and Budworm	Mites	Armyworm	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites	Mites
Application rate (lb ai /A)	0.25	0.2	0.2	0.15	0.3	0.075	0.25	0.3	0.25	0.2	0.15	
Number of applications	2	2	2	3	1	6	2	1	2	2	3	
Interval (days)	7	7	7	7	not applicable	7	7	not applicable	7	7	7	
Days after first application	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	3.89	3.11	3.11	2.31	5.12	1.05	3.89	5.12	3.89	3.11	2.31	
3.0	1.24	0.99	0.99	0.74	1.79	0.38	1.24	1.79	1.24	0.99	0.74	
7.0	0.66	0.53	0.53	0.40	1.25	0.16	0.66	1.25	0.66	0.53	0.40	
7.1	4.99	3.99	3.99	2.96	--	1.27	2.78	--	2.78	3.99	2.96	
14.0	1.51	1.21	1.21	0.90	--	0.32	1.51	--	1.51	1.21	0.90	
14.1	--	--	--	2.23	--	1.35	--	--	--	--	2.23	
21.0	--	--	--	0.87	--	0.34	--	--	--	--	0.87	
21.1	--	--	--	0.87	--	1.39	--	--	--	--	0.87	
28.0	--	--	--	0.59	--	0.41	--	--	--	--	0.59	

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 36. Northern Cardinal Oral Exposure

Region	Western/ Mites, Bollworm and Budworm	Western/ Bollworm and Budworm	Western/ Armyworm	Western/ Mites	Western/ Mites	Western/ Mites	Eastern/ Bollworm and Budworm	Eastern/ Armyworm	Eastern/ Mites and Armyworm	Eastern/ Mites
Pest										
Application rate (lb ai /A)	0.25	0.2	0.2	0.075	0.15	0.3	0.25	0.2	0.15	
Number of applications	2	2	2	6	3	1	2	2	3	
Interval (days)	7	7	7	7	7	not applicable	7	7	7	
Days after first application										
	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	3.59	2.88	2.88	0.89	2.14	5.04	3.59	2.88	2.14	
3.0	1.21	0.97	0.97	0.37	0.72	1.93	1.21	0.97	0.72	
7.0	0.80	0.64	0.64	0.17	0.48	1.66	0.80	0.64	0.48	
7.1	5.08	4.06	4.06	1.16	3.02	--	4.13	4.06	3.02	
14.0	1.95	1.56	1.56	0.37	1.16	--	1.95	1.56	1.16	
14.1	--	--	--	1.24	1.77	--	--	--	1.77	
21.0	--	--	--	0.37	1.07	--	--	--	1.07	
21.1	--	--	--	1.26	1.07	--	--	--	1.07	
28.0	--	--	--	0.48	0.77	--	--	--	0.77	

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 37. Blue Grosbeak Oral Exposure

Region	Western/ Mites, Bollworm and Budworm	Western/ Bollworm and Budworm	Western/ Armyworm	Western/ Mites	Western/ Mites	Eastern/ Bollworm and Budworm	Eastern/ Armyworm	Eastern/ Mites and Armyworm	Eastern/ Mites
Application rate (lb ai /A)	0.25	0.2	0.2	0.15	0.075	0.3	0.25	0.2	0.15
Number of applications	2	2	2	3	6	1	2	2	3
Interval (days)	5	5	5	5	5	not applicable	5	5	5
Days after first application	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	3.42	2.75	2.75	2.04	0.83	4.89	3.42	2.75	2.04
3.0	1.17	0.93	0.93	0.70	0.36	1.91	1.17	0.93	0.70
7.0	0.81	0.64	0.64	0.48	0.16	1.72	0.81	0.64	0.48
7.1	4.97	3.97	3.97	2.95	1.10	--	4.35	3.97	2.95
14.0	2.01	1.60	1.60	1.20	0.38	--	2.01	1.60	1.20
14.1	--	--	--	1.61	1.18	--	--	--	1.61
21.0	--	--	--	1.10	0.37	--	--	--	1.10
21.1	--	--	--	1.10	1.20	--	--	--	1.10
28.0	--	--	--	0.80	0.48	--	--	--	0.80

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 38. Mourning Dove Oral Exposure

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Mites	Bollworm and Budworm	Mites	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites	Mites
Application rate (lb ai /A)	0.25	0.2	0.2	0.15	0.075	0.3	0.075	0.3	0.25	0.2	0.15	0.15
Number of applications	2	2	2	3	6	1	3	1	2	2	3	3
Interval (days)	5	5	5	5	5	not applicable	5	not applicable	5	5	5	5
Days after first application	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	1.57	1.26	1.26	0.94	0.36	2.33	0.94	2.33	1.57	1.26	0.94	0.94
3.0	0.55	0.44	0.44	0.33	0.17	0.95	0.33	0.95	0.55	0.44	0.33	0.33
7.0	0.42	0.33	0.33	0.25	0.08	0.92	0.25	0.92	0.42	0.33	0.25	0.25
7.1	2.41	1.92	1.92	1.43	0.50	--	1.43	--	2.41	1.92	1.43	1.43
14.0	1.07	0.85	0.85	0.64	0.19	--	0.64	--	1.07	0.85	0.64	0.64
14.1	--	--	--	0.66	0.54	--	0.66	--	--	--	0.66	0.66
21.0	--	--	--	0.57	0.18	--	0.57	--	--	--	0.57	0.57
21.1	--	--	--	0.57	0.55	--	0.57	--	--	--	0.57	0.57
28.0	--	--	--	0.42	0.25	--	0.42	--	--	--	0.42	0.42

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 39. Red-Winged Blackbird Oral Exposure

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Bollworm and Budworm	Mites	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites	Mites	Mites
Application rate (lb ai /A)	0.25	0.2	0.2	0.15	0.3	0.075	0.3	0.25	0.2	0.15	0.15	0.15
Number of applications	2	2	2	3	1	6	1	2	2	3	3	3
Interval (days)	7	7	7	7	not applicable	7	not applicable	7	7	7	7	7
Days after first application	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	3.00	2.41	2.41	1.79	4.31	0.72	4.31	3.00	2.41	1.79	1.79	1.79
3.0	1.03	0.82	0.82	0.62	1.70	0.32	1.70	1.03	0.82	0.62	0.62	0.62
7.0	0.72	0.58	0.58	0.43	1.55	0.15	1.55	0.72	0.58	0.43	0.43	0.43
7.1	4.40	3.51	3.51	2.61	--	0.97	--	3.94	3.51	2.61	2.61	2.61
14.0	1.80	1.44	1.44	1.08	--	0.34	--	1.80	1.44	1.08	1.08	1.08
14.1	--	--	--	1.39	--	1.03	--	--	--	--	1.39	1.39
21.0	--	--	--	0.98	--	0.33	--	--	--	--	0.98	0.98
21.1	--	--	--	0.98	--	1.05	--	--	--	--	0.98	0.98
28.0	--	--	--	0.72	--	0.43	--	--	--	--	0.72	0.72

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 40. White-Footed Mouse Oral Exposure

Region	Western	Western	Western	Western	Western	Western	Western	Western	Eastern	Eastern	Eastern	Eastern
Pest	Mites, Bollworm and Budworm	Bollworm and Budworm	Armyworm	Mites	Mites	Mites	Bollworm and Budworm	Armyworm	Mites and Armyworm	Mites	Mites	Mites
Application rate (lb ai /A)	0.25	0.2	0.2	0.075	0.15	0.075	0.3	0.25	0.2	0.15	0.25	0.15
Number of applications	2	2	2	6	3	6	1	2	2	3	2	3
Interval (days)	7	7	7	7	7	7	not applicable	7	7	7	7	7
Days after first application	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day	Exposure mg/kg/day
0.1	11.11	8.89	8.89	3.24	6.66	3.24	13.72	11.11	8.89	6.66	11.11	6.66
3.0	2.00	1.60	1.60	0.61	1.20	0.61	2.65	2.00	1.60	1.20	2.00	1.20
7.0	0.70	0.56	0.56	0.17	0.42	0.17	1.22	0.70	0.56	0.42	0.70	0.42
7.1	12.18	9.74	9.74	3.46	7.29	3.46	--	11.98	9.74	7.29	11.98	7.29
14.0	1.43	1.15	1.15	0.32	0.86	0.32	--	1.43	1.15	0.86	1.43	0.86
14.1	--	--	--	3.54	6.71	3.54	--	--	--	6.71	--	6.71
21.0	--	--	--	0.34	0.86	0.34	--	--	--	0.86	--	0.86
21.1	--	--	--	3.58	0.86	3.58	--	--	--	0.86	--	0.86
28.0	--	--	--	0.43	0.59	0.43	--	--	--	0.59	--	0.59

All oral exposure models terminated at 28 days of exposure following first application, regardless of the total number of applications possible.

-- value not estimated due to limitations of individual compartment residue data

Table 41. MUSCRAT (PRZM 3.1.1 & EXAMS 2.97.5) and PRZM 3.1.2/EXAMS Estimates of Chlorfenapyr Concentrations in Water and Sediment

Census of Ag Region	Application (lbs/ac)	Peak	96 Hour	21 Day	60 Day	90 Day	Annual
MUSCRAT Dissolved Concentration Water Column (ppb)							
Region 4	0.3 July 7 0.2 July 15	3.51	2.87	2.14	1.9	1.83	1.73
Region 6	0.3 July 7 0.2 July 15	3.96	3.36	2.52	2.17	2.12	2
Region 7	0.3 July 7 0.2 July 15	5.35	4.16	2.74	2.43	2.35	2.12
Region 11	0.2 June 15 0.3 July 15	2.13	1.7	1.17	1	0.97	0.8
PRZM 3.1.2/EXAMS Dissolved Concentration Water Column (ppb)							
Standard EFED MS Cotton Site	0.2 June 15 0.3 July 15	2.49	1.97	1.49	1.28	1.25	1.04
MUSCRAT Adsorbed Concentration Benthic Layer ($\mu\text{g}/\text{kg}$)							
Region 4	0.3 July 7 0.2 July 15	830	829	828	817	810	778
Region 6	0.3 July 7 0.2 July 15	955	955	952	944	938	910
Region 7	0.3 July 7 0.2 July 15	1040	1040	1030	1020	1020	961
Region 11	0.2 June 15 0.3 July 15	426	426	424	418	415	397
PRZM 3.1.2/EXAMS Adsorbed Concentration Benthic Layer ($\mu\text{g}/\text{kg}$)							
Standard EFED MS Cotton Site	0.3 July 7 0.2 July 15	533	532	529	520	516	473

Table 42. Risk Presumption, Risk Quotient Derivation and Risk Threshold Used for Floral and Faunal Risk Assessment

RISK PRESUMPTION	RISK QUOTIENT	LEVEL OF CONCERN
Birds		
Acute High Risk	EEC ¹ /LC ₅₀ or LD ₅₀ /day	0.5
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /day (or LD ₅₀ < 50 mg/kg)	0.2
Acute Endangered Species	EEC/LC ₅₀ or LD ₅₀ /day	0.1
Chronic Risk	EEC/NOEC	1
Wild Mammals		
Acute High Risk	EEC/LC ₅₀ or LD50/sqft or LD ₅₀ /day	0.5
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day (or LD ₅₀ < 50 mg/kg)	0.2
Acute Endangered Species	EEC/LC ₅₀ or LD50/sqft or LD ₅₀ /day	0.1
Chronic Risk	EEC/NOEC	1

¹ abbreviation for Estimated Environmental Concentration; designated ppm in avian/mammalian food items

RISK PRESUMPTION	RISK QUOTIENT	LEVEL OF CONCERN
Aquatic Animals		
Acute High Risk	EEC ¹ /LC ₅₀ or EC ₅₀	0.5
Acute Restricted Use	EEC/LC ₅₀ or EC ₅₀	0.1
Acute Endangered Species	EEC/LC ₅₀ or EC ₅₀	0.05
Chronic Risk	EEC/MATC or NOEC	1

¹ abbreviation for Estimated Environmental Concentration; designated ppb/ppm in water

RISK PRESUMPTION	RISK QUOTIENT	LEVEL OF CONCERN
Terrestrial and Semi-Aquatic Plants		
Acute High Risk	EEC ¹ /EC ₂₅	1
Acute Endangered Species	EEC/EC ₀₅ or NOEC	1
Aquatic Plants		
Acute High Risk	EEC ² /EC ₅₀	1
Acute Endangered Species	EEC/EC ₀₅ or NOEC	1

¹ abbreviation for Estimated Environmental Concentration; designated lb ai/A

² abbreviation for Estimated Environmental Concentration; designated ppb/ppm in water

Table 43. Avian Risk Quotients

Application rate lb ai/A	0.25	0.2	0.15	0.3	0.075															
Number of applications	2	2	3	1	6															
Interval	7	7	7	na	7															
Carolina Wren																				
Days after first application	2.59	1.17	1.59	43.85	2.07	0.94	1.27	35.10	1.53	0.69	0.94	25.98	3.32	1.50	2.03	56.21	0.72	0.33	0.44	12.21
Exposure mg/kg/d	0.81	0.37	0.50	13.68	0.64	0.29	0.40	10.93	0.49	0.22	0.30	8.22	1.11	0.50	0.68	18.74	0.24	0.11	0.15	4.10
Single Oral Dose RQ	0.39	0.17	0.24	6.55	0.31	0.14	0.19	5.27	0.23	0.10	0.14	3.90	0.68	0.31	0.42	11.48	0.10	0.04	0.06	1.64
Sub-acute Lethal RQ	3.18	1.44	1.95	53.90	2.54	1.15	1.56	43.09	1.88	0.85	1.15	31.90	--	--	--	--	0.85	0.38	0.52	14.36
Chronic RQ	14.0	0.84	0.38	14.24	0.67	0.30	0.41	11.42	0.50	0.22	0.30	8.42	--	--	--	--	0.19	0.09	0.12	3.28
Sub-acute Lethal RQ	14.1	--	--	--	--	--	--	--	1.58	0.71	0.97	26.72	--	--	--	--	0.91	0.41	0.56	15.35
Chronic RQ	21.0	--	--	--	--	--	--	--	0.50	0.23	0.31	8.51	--	--	--	--	0.21	0.09	0.13	3.53
Sub-acute Lethal RQ	21.1	--	--	--	--	--	--	--	0.30	0.14	0.19	5.12	--	--	--	--	0.93	0.42	0.57	15.74
Chronic RQ	28.0	--	--	--	--	--	--	--	0.33	0.15	0.20	5.57	--	--	--	--	0.24	0.11	0.15	4.11
White-Eyed Vireo																				
0.1	3.89	1.76	2.38	65.87	3.11	1.41	1.91	52.77	2.31	1.04	1.42	39.10	5.12	2.32	3.14	86.82	1.05	0.47	0.64	17.77
3.0	1.24	0.56	0.76	21.04	0.99	0.45	0.61	16.80	0.74	0.34	0.46	12.63	1.79	0.81	1.10	30.27	0.38	0.17	0.23	6.36
7.0	0.66	0.30	0.41	11.25	0.53	0.24	0.33	9.03	0.40	0.18	0.24	6.70	1.25	0.56	0.77	21.16	0.16	0.07	0.10	2.64
7.1	4.99	2.26	3.06	84.59	3.99	1.80	2.45	67.60	2.96	1.34	1.81	50.12	--	--	--	--	1.27	0.57	0.78	21.47
14.0	1.51	0.68	0.93	25.62	1.21	0.55	0.74	20.53	0.90	0.41	0.55	15.21	--	--	--	--	0.32	0.15	0.20	5.50
14.1	--	--	--	--	--	--	--	--	2.23	1.01	1.37	37.88	--	--	--	--	1.35	0.61	0.83	22.95
21.0	--	--	--	--	--	--	--	--	0.87	0.40	0.54	14.82	--	--	--	--	0.34	0.15	0.21	5.74
21.1	--	--	--	--	--	--	--	--	0.87	0.40	0.54	14.82	--	--	--	--	1.39	0.63	0.85	23.51
28.0	--	--	--	--	--	--	--	--	0.59	0.27	0.36	10.08	--	--	--	--	0.41	0.19	0.25	6.95

Single oral dose mg/Kd 2.21 single oral dose RQ = exposure/2.21

Subacute lethal dose mg/Kg/d 1.63 subacute oral dose RQ = exposure/1.63

Chronic dose mg/Kg/d 0.059 chronic oral dose RQ = exposure/0.059

-- risk quotients not calculated because of limitations in residue data

Table 44. Avian Risk Quotients

Application rate lb ai/A	0.25	0.2	0.15	0.3	0.075
Number of applications	2	2	3	1	6
Interval	7	7	7	na	7
Days after first application					
Exposure mg/kg/d	3.59	1.62	2.20	60.84	2.88
Single Oral Dose RQ	0.55	0.74	0.49	20.50	0.97
Sub-acute Lethal RQ	0.80	0.36	0.64	13.49	0.64
Chronic RQ	5.08	2.30	3.12	86.17	4.06
1.95	0.88	1.20	33.06	1.56	0.71
1.41	--	--	--	--	--
21.0	--	--	--	--	--
21.1	--	--	--	--	--
28.0	--	--	--	--	--
0.1	3.42	1.55	2.10	57.99	2.75
3.0	1.17	0.53	0.72	19.83	0.93
7.0	0.81	0.37	0.50	13.68	0.64
7.1	4.97	2.25	3.05	84.27	3.97
14.0	2.01	0.91	1.23	33.99	1.60
14.1	--	--	--	--	--
21.0	--	--	--	--	--
21.1	--	--	--	--	--
28.0	--	--	--	--	--
0.80	0.36	0.49	13.51	--	0.48
0.80	0.36	0.49	13.51	--	0.48

Northern Cardinal

Single oral dose mg/Kd 2.21 single oral dose RQ = exposure/2.21

Subacute lethal dose mg/kg/d 1.63 subacute oral dose RQ = exposure/1.63

Chronic dose mg/kg/d 0.059 chronic oral dose RQ = exposure/0.059

-- risk quotients not calculated because of limitations in residue data

Blue Grosbeak

Single oral dose mg/Kd 2.21 single oral dose RQ = exposure/2.21

Subacute lethal dose mg/kg/d 1.63 subacute oral dose RQ = exposure/1.63

Chronic dose mg/kg/d 0.059 chronic oral dose RQ = exposure/0.059

-- risk quotients not calculated because of limitations in residue data

Table 45. Avian Risk Quotients

Application Rate lb ai/A	0.25	0.2	0.15	0.35	0.075
Number of applications	2	2	3	1	6
Interval	7	7	7	na	7
Days after first application					
Exposure mg/kg/d	1.57	1.26	0.94	0.43	0.58
Single Oral Dose RQ	0.71	0.57	0.43	0.15	0.20
Sub-acute Lethal RQ	0.97	0.78	0.27	0.20	0.15
Chronic RQ	26.66	21.43	7.50	5.66	32.58
Exposure mg/kg/d	0.55	0.44	0.33	0.25	1.43
Single Oral Dose RQ	0.25	0.20	0.15	0.11	0.65
Sub-acute Lethal RQ	0.19	0.15	0.20	0.15	0.88
Chronic RQ	7.10	5.66	5.66	4.24	24.30
Exposure mg/kg/d	2.41	1.92	1.43	0.65	0.85
Single Oral Dose RQ	1.09	0.87	0.87	1.18	0.39
Sub-acute Lethal RQ	1.48	1.18	1.18	1.18	1.445
Chronic RQ	40.83	32.58	32.58	14.45	18.07
Exposure mg/kg/d	1.07	0.85	0.64	0.29	0.64
Single Oral Dose RQ	0.48	0.39	0.29	0.39	0.30
Sub-acute Lethal RQ	0.65	0.52	0.52	0.41	0.41
Chronic RQ	18.07	14.45	10.81	11.23	9.71
Exposure mg/kg/d	14.1	--	0.66	0.30	0.57
Single Oral Dose RQ	--	--	0.26	0.26	0.35
Sub-acute Lethal RQ	--	--	0.35	0.35	0.35
Chronic RQ	--	--	9.71	9.71	9.71
Exposure mg/kg/d	21.1	--	0.57	0.26	0.42
Single Oral Dose RQ	--	--	0.26	0.26	0.19
Sub-acute Lethal RQ	--	--	0.35	0.35	0.26
Chronic RQ	--	--	9.71	9.71	7.20
Exposure mg/kg/d	28.0	--	0.42	0.19	0.72
Single Oral Dose RQ	--	--	0.19	0.19	0.33
Sub-acute Lethal RQ	--	--	0.26	0.26	0.44
Chronic RQ	--	--	7.20	7.20	12.15

Red-Winged Blackbird

Application Rate lb ai/A	0.25	0.2	0.15	0.35	0.075
Number of applications	2	2	3	1	6
Interval	7	7	7	na	7
Days after first application					
Exposure mg/kg/d	3.00	2.41	1.79	0.81	1.10
Single Oral Dose RQ	1.36	1.09	0.81	0.28	0.38
Sub-acute Lethal RQ	1.84	1.48	1.10	1.10	1.10
Chronic RQ	50.87	40.85	30.39	10.45	7.31
Exposure mg/kg/d	1.03	0.82	0.62	0.43	0.20
Single Oral Dose RQ	0.47	0.37	0.51	0.20	0.26
Sub-acute Lethal RQ	0.63	0.51	0.51	0.28	0.38
Chronic RQ	17.48	13.96	13.96	10.45	7.31
Exposure mg/kg/d	0.72	0.58	0.43	0.20	0.26
Single Oral Dose RQ	0.33	0.26	0.35	0.20	0.26
Sub-acute Lethal RQ	0.44	0.35	0.35	0.20	0.26
Chronic RQ	12.25	9.78	9.78	7.31	7.31
Exposure mg/kg/d	4.40	3.51	2.61	1.18	1.60
Single Oral Dose RQ	1.99	1.59	1.18	0.49	0.66
Sub-acute Lethal RQ	2.70	2.15	1.60	1.60	1.60
Chronic RQ	74.55	59.51	44.32	18.25	18.25
Exposure mg/kg/d	1.80	1.44	1.08	0.49	0.66
Single Oral Dose RQ	0.82	0.65	0.88	0.49	0.66
Sub-acute Lethal RQ	1.11	0.88	0.88	0.66	0.66
Chronic RQ	30.55	24.45	24.45	18.25	18.25
Exposure mg/kg/d	14.1	--	1.39	0.63	0.85
Single Oral Dose RQ	--	--	0.63	0.63	0.85
Sub-acute Lethal RQ	--	--	0.85	0.85	0.85
Chronic RQ	--	--	23.52	23.52	23.52
Exposure mg/kg/d	21.0	--	0.98	0.44	0.60
Single Oral Dose RQ	--	--	0.44	0.44	0.60
Sub-acute Lethal RQ	--	--	0.60	0.60	0.60
Chronic RQ	--	--	16.63	16.63	16.63
Exposure mg/kg/d	21.1	--	0.98	0.44	0.60
Single Oral Dose RQ	--	--	0.44	0.44	0.60
Sub-acute Lethal RQ	--	--	0.60	0.60	0.60
Chronic RQ	--	--	16.63	16.63	16.63
Exposure mg/kg/d	28.0	--	0.72	0.33	0.44
Single Oral Dose RQ	--	--	0.33	0.33	0.44
Sub-acute Lethal RQ	--	--	0.44	0.44	0.44
Chronic RQ	--	--	12.15	12.15	12.15

Single oral dose mg/Kd 2.21 single oral dose RQ = exposure/2.21

Subacute lethal dose mg/kg/d 1.63 subacute oral dose RQ = exposure/1.63

Chronic dose mg/kg/d 0.059 chronic oral dose RQ = exposure/0.059

-- risk quotients not calculated because of limitations in residue data

Table 46. Mammal Risk Quotients

Application rate lb ai/A	0.25	0.2	0.15	0.35	0.075
Number of applications	2	2	3	1	6
Interval	7	7	7	na	7
Days after first application					
Exposure mg/kg/d	11.11	8.89	6.66	13.72	3.24
Single Oral Dose RQ	0.20	0.16	0.12	0.25	0.06
Sub-chronic RQ	1.56	1.25	0.94	1.93	0.46
Chronic RQ	2.22	1.78	1.33	2.74	0.65
Exposure mg/kg/d	2.00	1.60	1.20	2.65	0.61
Single Oral Dose RQ	0.04	0.03	0.02	0.05	0.01
Sub-chronic RQ	0.28	0.23	0.17	0.37	0.09
Chronic RQ	0.40	0.32	0.24	0.53	0.12
Exposure mg/kg/d	0.70	0.56	0.42	1.22	0.17
Single Oral Dose RQ	0.01	0.01	0.01	0.02	0.00
Sub-chronic RQ	0.10	0.08	0.06	0.17	0.02
Chronic RQ	0.14	0.11	0.08	0.24	0.03
Exposure mg/kg/d	12.18	9.74	7.29	--	3.46
Single Oral Dose RQ	0.22	0.18	0.13	--	0.06
Sub-chronic RQ	1.72	1.37	1.03	--	0.49
Chronic RQ	2.44	1.95	1.46	--	0.69
Exposure mg/kg/d	1.43	1.15	0.86	--	0.32
Single Oral Dose RQ	0.03	0.02	0.02	--	0.01
Sub-chronic RQ	0.20	0.16	0.12	--	0.04
Chronic RQ	0.29	0.23	0.17	--	0.06
Exposure mg/kg/d	14.1	6.71	0.86	--	3.54
Single Oral Dose RQ	--	--	0.12	--	0.06
Sub-chronic RQ	--	--	0.94	--	0.50
Chronic RQ	--	--	1.34	--	0.71
Exposure mg/kg/d	21.0	0.86	0.86	--	0.34
Single Oral Dose RQ	--	0.02	0.02	--	0.01
Sub-chronic RQ	--	--	0.12	--	0.05
Chronic RQ	--	--	0.17	--	0.07
Exposure mg/kg/d	21.1	--	0.86	--	3.58
Single Oral Dose RQ	--	--	0.02	--	0.07
Sub-chronic RQ	--	--	0.12	--	0.50
Chronic RQ	--	--	0.17	--	0.72
Exposure mg/kg/d	28.0	--	0.59	--	0.43
Single Oral Dose RQ	--	--	0.01	--	0.01
Sub-chronic RQ	--	--	0.08	--	0.06
Chronic RQ	--	--	0.12	--	0.09

White-Footed Mouse

Acute oral dose 55 single oral dose RQ = exposure/55

Subchronic dose 7.1 subchronic oral dose RQ = exposure/7.1

Chronic dose 5 chronic oral dose RQ = exposure/5

-- risk quotients not calculated because of limitations in residue data

Table 47. Risk Quotients (RQs) for Freshwater Fish Based On a Rainbow Trout LC₅₀ of 7.44 ppb and a Rainbow Trout NOEC of 3.68 ppb in Regions 4, 6, 7, and 11

Region/ Application Method and Rate (lb ai/a)	LC ₅₀ (ppb)	NOEC (ppb)	EEC Initial (ppb)	EEC 60-Day (ppb)	Acute RQ (EEC/LC ₅₀)	Chronic RQ (EEC/NOEC)
Region 4/Cotton/aerial & ground 0.3	7.44	3.68	3.51	1.90	0.47	0.52
Region 6/Cotton/aerial & ground 0.3	7.44	3.68	3.96	2.17	0.53	0.59
Region 7/Cotton/aerial & ground 0.3	7.44	3.68	4.16	2.43	0.56	0.66
Region 11/Cotton/aerial &ground 0.3	7.44	3.68	1.7	1	0.23	0.27

Table 48. Risk Quotients (RQs) for Freshwater Invertebrates Based On a *Daphnia magna* EC₅₀/LC₅₀ of 5.83 and a *Daphnia magna* NOEC of 3.57 ppb in Regions 4,6, 7, and 11

Region/ Application Method and Rate (lb ai/a)	LC ₅₀ (ppb)	NOEC (ppb)	EEC Initial (ppb)	EEC 21-Day Average	Acute RQ (EEC/LC ₅₀)	Chronic RQ (EEC/NOEC)
Region 4/Cotton/aerial & ground 0.3	5.83	3.57	3.51	2.14	0.60	0.60
Region 6/ground & aerial 0.3	5.83	3.57	3.96	2.52	0.68	0.71
Region 7/Cotton/aerial & ground 0.3	5.83	3.57	4.16	2.74	0.71	0.77
Region 11/ground & aerial 0.3	5.83	3.57	1.70	1.17	0.29	0.33

Table 49. Risk Quotients (RQs) for Estuarine/Marine Organisms in Regions 4, 6, 7, and 11

Region/Application Method and Rate (lb ai/a)	Species	LC ₅₀ (ppb)	NOEC (ppb)	EEC Initial (ppb)	EEC 21-Day Average	EEC 56-Day Average	Acute RQ (EEC/LC ₅₀)	Chronic RQ (EEC/NOEC)
Region 4/aerial & ground 0.3	Mysid	2.03	0.172	3.51	2.14	1.90	1.73	12.44
	Sheepshead Minnow	60.2	-	3.51	2.14	1.90	0.06	-
Region 6/Aerial & ground 0.3	Mysid	2.03	0.172	3.36	2.52	2.17	1.66	14.65
	Sheepshead Minnow	60.2	-	3.36	2.52	2.17	0.06	-
Region 7/aerial & ground 0.3	Mysid	2.03	0.172	5.35	2.74	2.43	2.64	15.93
	Sheepshead Minnow	60.2	-	5.35	2.74	2.43	0.09	-
Region 11/Aerial & ground 0.3	Mysid	2.03	0.172	2.13	1.17	1.00	1.05	6.80
	Sheepshead Minnow	60.2	-	2.13	1.17	1.00	0.04	-

Table 50. Risk Quotients (RQs) for the Freshwater Amphipod Based On a *Hyaletella azteca* EC₅₀/LC₅₀ of 19.6 mg/kg in Regions 4,6, 7, and 11

Region/ Application Method and Rate (lb ai/a)	LC ₅₀ (μ/Kg)	NOEC	EEC Initial (ppb)	EEC 21-Day Average	Acute RQ (EEC/LC ₅₀)	Chronic RQ (EEC/NOEC)
Region 4/Cotton/aerial & ground 0.3	19,600	-	830	828	0.04	-
Region 6/ground & aerial 0.3	19,600	-	955	952	0.05	-
Region 7/Cotton/aerial & ground 0.3	19,600	-	1040	1030	0.05	-
Region 11/ground & aerial 0.3	19,600	-	426	424	0.02	-

¹No chronic data available to EPA at this time

Table 51. Risk Quotients (RQs) for the Marine Amphipod Based On a *Leptocheirus plumulosus* EC₅₀/LC₅₀ of 0.18 mg/kg in Regions 4,6, 7, and 11

Region/ Application Method and Rate (lb ai/a)	LC ₅₀ (μ/Kg)	NOEC	EEC Initial (ppb)	EEC 21-Day Average	Acute RQ (EEC/LC ₅₀)	Chronic RQ (EEC/NOEC)
Region 4/Cotton/aerial & ground 0.3+ .2	180	-	830	828	4.61	-
Region 6/ground & aerial 0.3 +0.2	180	-	955	952	5.31	-
Region 7/Cotton/aerial & ground 0.3 + 0.2	180	-	1040	1030	5.78	-
Region 11/ground & aerial 0.3 +0.2	180	-	426	424	2.37	-

Table 52. Population Status of Risk Assessment Bird Species in Cotton States

State	Trends in Breeding Bird populations 1966-1996					
	Carolina Wren	White-Eyed Vireo	Northern Cardinal	Blue Grossbeak	Mourning Dove	Red-Winged Blackbird
AL	negative	positive	negative	positive	negative	negative*
AR	negative	negative*	positive	positive	negative	positive*
AZ	no data	no data	negative	positive	negative	positive
CA	no data	no data	no data	positive	negative*	positive
FL	positive	negative	negative	positive	positive	negative*
GA	positive	negative	negative*	positive	negative	negative*
LA	positive	negative	negative	positive	positive	negative
MO	positive	negative	negative*	positive	negative*	positive
MS	positive	positive	negative	negative	negative	negative*
NC	positive	positive	negative	positive	negative	negative
NM	no data	no data	no data	positive	negative	negative
OK	positive	positive	positive	negative	negative*	positive
SC	negative	stable	negative*	positive	negative	negative*
TN	positive	negative*	negative*	positive	negative	positive
TX	positive	negative*	positive	negative	negative*	negative
VA	positive	positive	negative*	positive	negative	negative*

* denotes declines significant to $p < 0.05$

Table 53. Required Aquatic Testing

GUIDELINE #	STUDY	REASON
72-1	LC ₅₀ Rainbow trout	Optional. To be repeated at the discretion of the registrant (see study description) . Invalid test due to failure to measure test concentration on photolytic degradate (Cl 357,806). The purported LC ₅₀ of 2.6 ppb implies that this compound is more toxic than the parent.
72-3	EC ₅₀ Oyster Shell Deposition Study	Invalid study due to inadequate shell growth in controls (MRID 434928-17) Since an embryo-larvae study was not conducted, this study must be repeated.
72-4	Sheepshead minnow Early life (marine/estuarine)	Invalid study due to low Dissolved Oxygen level throughout the experiment. The required fish full life-cycle study listed directly below would satisfy this requirement.
72-5	Sheepshead minnow Life-cycle Study	The EEC is greater than 0.1 of the NOEL in the fish early life and invertebrate Life-Cycle study. The studies submitted under MRID 443648-02 and MRID 443648-03 need to be repeated due to control contamination.