Appendix F
Example Output from KABAM

Table 1. Chemical characteristics of Lambda-cyhalothrin.		
Characteristic	**Value**	**Comments/Guidance**
Pesticide Name	**Lambda-cyhalothrin**	**Required input**
Log K_{OW}	**7**	**Required input** Enter value from acceptable or supplemental study submitted by registrant or available in scientific literature.
K_{OW}	**10000000**	No input necessary. This value is calculated automatically from the Log K_{OW} value entered above.
K_{OC} (L/kg OC)	**333200**	**Required input** Input value used in PRZM/EXAMS to derive EECs. Follow input parameter guidance for deriving this parameter value (USEPA 2002).
Time to steady state (T_S; days)	**2727**	No input necessary. This value is calculated automatically from the Log K_{OW} value entered above.
Pore water EEC (µg/L)	**0.005**	**Required input** Enter value generated by PRZM/EXAMS benthic file. PRZM/EXAMS EEC represents the freely dissolved concentration of the pesticide in the pore water of the sediment. The appropriate averaging period of the EEC is dependent on the specific pesticide being modeled and is based on the time it takes for the chemical to reach steady state. Select the EEC generated by PRZM/EXAMS which has an averaging period closest to the time to steady state calculated above. In cases where the time to steady state exceeds 365 days, the user should select the EEC representing the average of yearly averages. The peak EEC should not be used.
Water Column EEC (µg/L)	**0.02**	**Required input** Enter value generated by PRZM/EXAMS water column file. PRZM/EXAMS EEC represents the freely dissolved concentration of the pesticide in the water column. The appropriate averaging period of the EEC is dependent on the specific pesticide being modeled and is based on the time it takes for the chemical to reach steady state. The averaging period used for the water column EEC should be the same as the one selected for the pore water EEC (discussed above).

Table 2. Input parameters for rate constants. "calculated" indicates that model will calculate rate constant.

Trophic level	k_1 (L/kg*d)	k_2 (d^{-1})	k_D (kg-food/kg-org/d)	k_E (d^{-1})	k_M* (d^{-1})
phytoplankton	calculated	calculated	0*	0*	0
zooplankton	calculated	21	calculated	calculated	0
benthic invertebrates	calculated	0.849	calculated	calculated	0
filter feeders	calculated	3.8	calculated	calculated	0
small fish	calculated	0.0765	calculated	calculated	0
medium fish	calculated	0.0765	calculated	calculated	0
large fish	calculated	0.0765	calculated	calculated	0

* Default value is 0.

k_1 and k_2 represent the uptake and elimination constants respectively, through respiration.

k_D and k_E represent the uptake and elimination constants, respectively, through diet.

k_M represents the metabolism rate constant.

Table 3. Mammalian and avian toxicity data for Lambda-cyhalothrin. These are required inputs.

Animal	Measure of effect (units)	Value	Species	If selected species is "other," enter body weight (in kg) here.
Avian	LD_{50} (mg/kg-bw)	3950	mallard duck	
	LC_{50} (mg/kg-diet)	3948	mallard duck	
	NOAEC (mg/kg-diet)	5	Northern bobwhite quail	
	Mineau Scaling Factor	1.15	Default value for all species is 1.15 (for chemical specific values, see Mineau et al. 1996).	
Mammalian	LD_{50} (mg/kg-bw)	56	laboratory rat	
	LC_{50} (mg/kg-diet)	N/A	other	
	Chronic Endpoint	1.5	laboratory rat	
	units of chronic endpoint*	mg/kg-bw		

*ppm = mg/kg-diet

Must enter mammalian body weight corresponding to LC50

Table 11. Estimated concentrations of Lambda-cyhalothrin in ecosystem components.				
Ecosystem Component	**Total concentration (µg/kg-ww)**	**Lipid normalized concentration (µg/kg-lipid)**	**Contribution due to diet (µg/kg-ww)**	**Contribution due to respiration (µg/kg-ww)**
Water (total)*	0	N/A	N/A	N/A
Water (freely dissolved)*	0	N/A	N/A	N/A
Sediment (pore water)*	0	N/A	N/A	N/A
Sediment (in solid)**	67	N/A	N/A	N/A
Phytoplankton	2,458	122875	N/A	2,457.51
Zooplankton	55	1825	14.19	40.56
Benthic Invertebrates	128	4270	42.78	85.32
Filter Feeders	13	640	4.22	8.59
Small Fish	208	5188	24.72	182.82
Medium Fish	115	2870	32.41	82.39
Large Fish	54	1361	15.84	38.59
* Units: µg/L; **Units: µg/kg-dw				

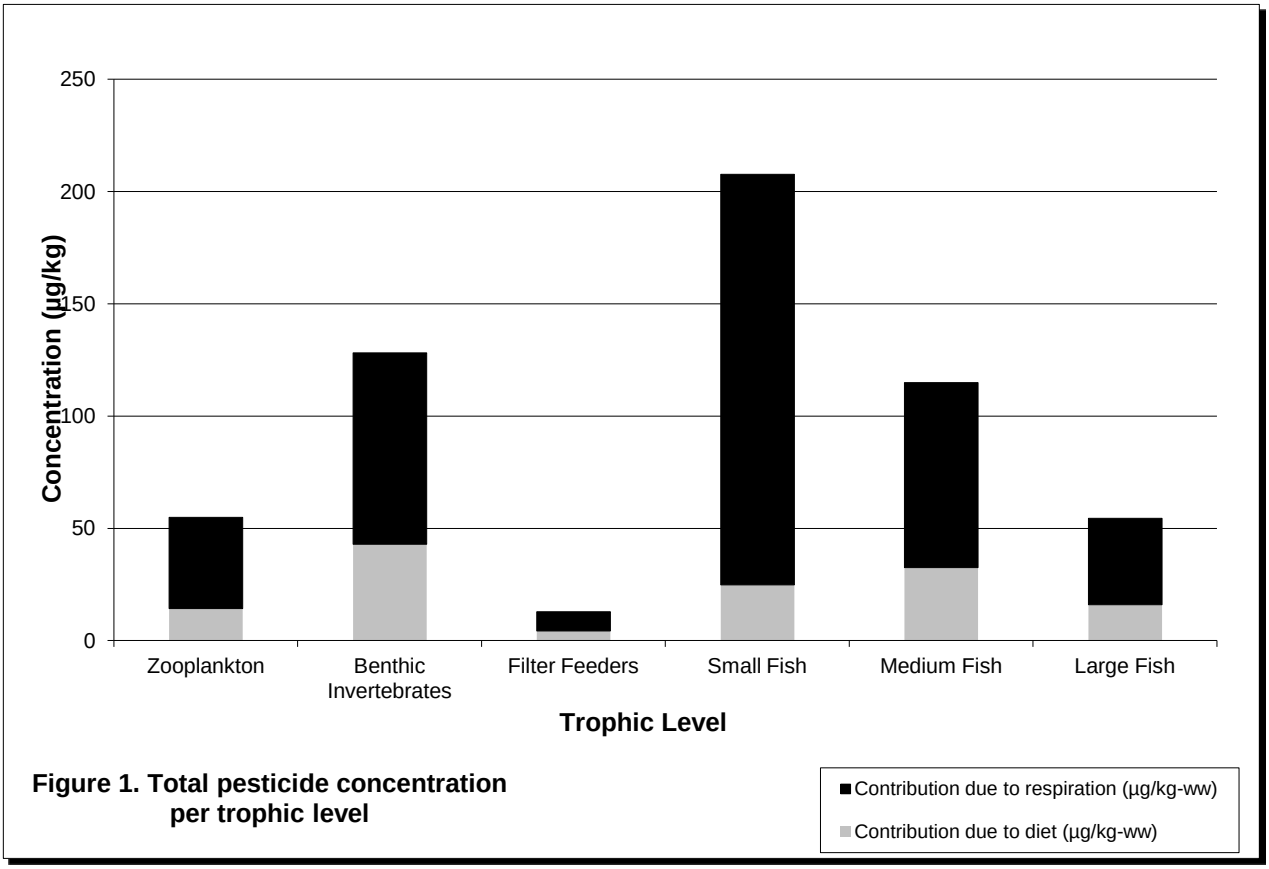

Figure 1. Total pesticide concentration per trophic level

Table 12. Total BCFand BAF values of Lambda-cyhalothrin in aquatic trophic levels.		
Trophic Level	**Total BCF (µg/kg-ww)/(µg/L)**	**Total BAF (µg/kg-ww)/(µg/L)**
Phytoplankton	480001	122875
Zooplankton	2031	2737
Benthic Invertebrates	4310	6405
Filter Feeders	430	640
Small Fish	9544	10377
Medium Fish	4263	5740
Large Fish	1978	2721

Table 13. Lipid-normalized BCF, BAF, BMF and BSAF values of Lambda-cyhalothrin in aquatic trophic levels.				
Trophic Level	**BCF (µg/kg-lipid)/(µg/L)**	**BAF (µg/kg-lipid)/(µg/L)**	**BMF (µg/kg-lipid)/(µg/kg-lipid)**	**BSAF (µg/kg-lipid)/(µg/kg-OC)**
Phytoplankton	24000045	6143767	N/A	74
Zooplankton	67708	91239	0.01	1
Benthic Invertebrates	143666	213509	0.10	3
Filter Feeders	21507	32021	0.02	0
Small Fish	238595	259416	1.70	3
Medium Fish	106577	143500	0.61	2
Large Fish	49461	68031	0.47	1

Table 14. Calculation of EECs for mammals and birds consuming fish contaminated by Lambda-cyhalothrin.						
Wildlife Species	**Biological Parameters**				**EECs (pesticide intake)**	
	Body Weight (kg)	**Dry Food Ingestion Rate (kg-dry food/kg-bw/day)**	**Wet Food Ingestion Rate (kg-wet food/kg-bw/day)**	**Drinking Water Intake (L/d)**	**Dose Based (mg/kg-bw/d)**	**Dietary Based (ppm)**
Mammalian						
fog/water shrew	0.02	0.140	0.585	0.003	0.075	0.13
rice rat/star-nosed mole	0.1	0.107	0.484	0.011	0.056	0.12
small mink	0.5	0.079	0.293	0.048	0.034	0.11

large mink	1.8	0.062	0.229	0.168	0.026	0.11
small river otter	5.0	0.052	0.191	0.421	0.022	0.11
large river otter	15.0	0.042	0.157	1.133	0.009	0.05
Avian						
sandpipers	0.0	0.228	1.034	0.004	0.1210	0.12
cranes	6.7	0.030	0.136	0.211	0.0116	0.09
rails	0.1	0.147	0.577	0.010	0.0969	0.17
herons	2.9	0.040	0.157	0.120	0.0191	0.12
small osprey	1.3	0.054	0.199	0.069	0.0229	0.11
white pelican	7.5	0.029	0.107	0.228	0.0058	0.05

Table 15. Calculation of toxicity values for mammals and birds consuming fish contaminated by Lambda-cyhalothrin.

	Toxicity Values			
	Acute		Chronic	
Wildlife Species	Dose Based (mg/kg-bw)	Dietary Based (mg/kg-diet)	Dose Based (mg/kg-bw)	Dietary Based (mg/kg-diet)
Mammalian				
fog/water shrew	117.59	N/A	3.15	30
rice rat/star-nosed mole	79.77	N/A	2.14	30
small mink	52.59	N/A	1.41	30
large mink	37.19	N/A	1.00	30
small river otter	28.80	N/A	0.77	30
large river otter	21.89	N/A	0.59	30
Avian				
sandpipers	2050.94	3948.00	N/A	5
cranes	4905.80	3948.00	N/A	5
rails	2474.93	3948.00	N/A	5
herons	4326.71	3948.00	N/A	5

small osprey	3813.60	3948.00	N/A	5
white pelican	4989.51	3948.00	N/A	5

Table 16. Calculation of RQ values for mammals and birds consuming fish contaminated by Lambda-cyhalothrin.

Wildlife Species	Acute		Chronic	
	Dose Based	Dietary Based	Dose Based	Dietary Based
Mammalian				
fog/water shrew	0.001	N/A	0.024	0.004
rice rat/star-nosed mole	0.001	N/A	0.026	0.004
small mink	0.001	N/A	0.024	0.004
large mink	0.001	N/A	0.026	0.004
small river otter	0.001	N/A	0.028	0.004
large river otter	0.000	N/A	0.015	0.002
Avian				
sandpipers	0.000	0.000	N/A	0.023
cranes	0.000	0.000	N/A	0.017
rails	0.000	0.000	N/A	0.034
herons	0.000	0.000	N/A	0.024
small osprey	0.000	0.000	N/A	0.023
white pelican	0.000	0.000	N/A	0.011