

Appendix F. KABAM - EEC and RQ Calculations

KABAM - RQ values for Bioaccumulation of S-methoprene in CTS

Table 11. Estimated concentrations of S-methoprene 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)**	33	N/A	N/A	N/A
Phytoplankton	5,203	260133	N/A	5,202.66
Zooplankton	4,450	148322	376.07	4,073.58
Benthic Invertebrates	5,262	175410	971.89	4,290.40
Filter Feeders	3,451	172550	626.66	2,824.35
Small Fish	9,602	240052	4,451.90	5,150.19
Medium Fish	14,537	363418	9,842.65	4,694.06
Large Fish	31,161	779030	26,994.86	4,166.34

* Units: µg/L; **Units: µg/kg-dw

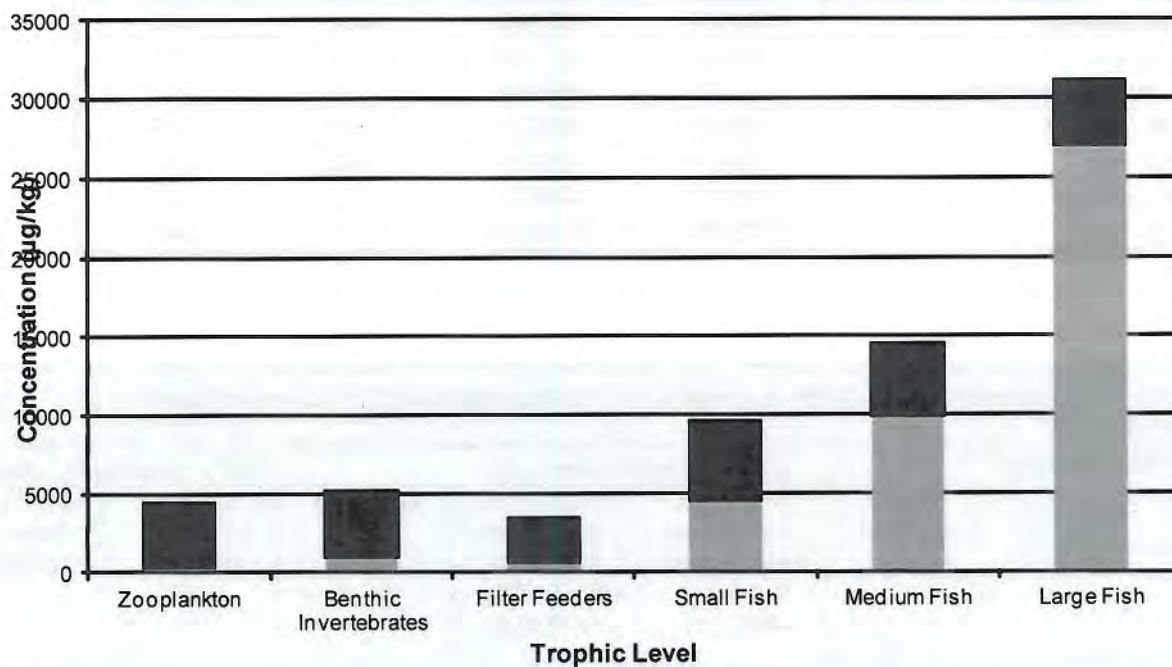


Figure 1. Total pesticide concentration per trophic level

■ Contribution due to respiration (µg/kg-ww)
 ■ Contribution due to diet (µg/kg-ww)

Table 12. Total BCF and BAF values of S-methoprene in aquatic trophic levels.

Trophic Level	Total BCF ($\mu\text{g/kg-ww}/(\mu\text{g/L})$)	Total BAF ($\mu\text{g/kg-ww}/(\mu\text{g/L})$)
Phytoplankton	15180	13584
Zooplankton	10816	11618
Benthic Invertebrates	11774	13740
Filter Feeders	7740	9010
Small Fish	15147	25071
Medium Fish	15147	37955
Large Fish	15195	81361

Table 13. Lipid-normalized BCF, BAF, BMF and BSAF values of S-methoprene in aquatic trophic levels.

Trophic Level	BCF ($\mu\text{g/kg-lipid}/(\mu\text{g/L})$)	BAF ($\mu\text{g/kg-lipid}/(\mu\text{g/L})$)	BMF ($\mu\text{g/kg-lipid}/(\mu\text{g/kg-lipid})$)	BSAF ($\mu\text{g/kg-lipid}/(\mu\text{g/kg-OC})$)
Phytoplankton	758992	679199	N/A	315
Zooplankton	360528	387263	0.57	180
Benthic Invertebrates	392475	457989	1.30	213
Filter Feeders	386975	450523	1.28	209
Small Fish	378677	626768	1.48	291
Medium Fish	378677	948871	1.75	441
Large Fish	379887	2034021	2.14	945

Table 14. Calculation of EECs for mammals and birds consuming fish contaminated by S-methoprene.

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	3.080	5.26
rice rat/star-nosed mole	0.1	0.107	0.484	0.011	2.950	6.10

small mink	0.5	0.079	0.293	0.048	4.264	14.54
large mink	1.8	0.062	0.229	0.168	3.331	14.54
small river otter	5.0	0.052	0.191	0.421	2.777	14.54
large river otter	15.0	0.042	0.157	1.133	4.896	31.16
Avian						
sandpipers	0.0	0.228	1.034	0.004	6.3480	6.14
cranes	6.7	0.030	0.136	0.211	1.0624	7.82
rails	0.1	0.147	0.577	0.010	4.2911	7.43
herons	2.9	0.040	0.157	0.120	1.5582	9.90
small osprey	1.3	0.054	0.199	0.069	2.8987	14.54
white pelican	7.5	0.029	0.107	0.228	3.3249	31.16

Table 15. Calculation of toxicity values for mammals and birds consuming fish contaminated by S-methoprene.				
Wildlife Species	Toxicity Values			
	Acute		Chronic	
	Dose Based (mg/kg-bw)	Dietary Based (mg/kg-diet)	Dose Based (mg/kg-bw)	Dietary Based (mg/kg-diet)
Mammalian				
fog/water shrew	20999.01	N/A	524.98	5000
rice rat/star-nosed mole	14244.99	N/A	356.12	5000
small mink	9391.04	N/A	234.78	5000
large mink	6640.47	N/A	166.01	5000
small river otter	5143.69	N/A	128.59	5000
large river otter	3908.36	N/A	97.71	5000
Avian				
sandpipers	1038.45	10000.00	N/A	30
cranes	2483.95	10000.00	N/A	30
rails	1253.13	10000.00	N/A	30

herons	2190.74	10000.00	N/A	30
small osprey	1930.94	10000.00	N/A	30
white pelican	2526.33	10000.00	N/A	30

Table 16. Calculation of RQ values for mammals and birds consuming fish contaminated by S-methoprene.				
Wildlife Species	Acute		Chronic	
	Dose Based	Dietary Based	Dose Based	Dietary Based
Mammalian				
fog/water shrew	0.000	N/A	0.006	0.001
rice rat/star-nosed mole	0.000	N/A	0.008	0.001
small mink	0.000	N/A	0.018	0.003
large mink	0.001	N/A	0.020	0.003
small river otter	0.001	N/A	0.022	0.003
large river otter	0.001	N/A	0.050	0.006
Avian				
sandpipers	0.006	0.001	N/A	0.205
cranes	0.000	0.001	N/A	0.261
rails	0.003	0.001	N/A	0.248
herons	0.001	0.001	N/A	0.330
small osprey	0.002	0.001	N/A	0.485
white pelican	0.001	0.003	N/A	1.039