Cyfluthrin

Toxicity Data Summary

Hyalella azteca

Picard CR. 2010b. 10-Day toxicity test exposing freshwater amphipods (*Hyalella azteca*) to cyfluthrin applied to formulated sediment under static-renewal conditions. Springborn Smithers Laboratories Study No. 13656.6134, Wareham, MA. Submitted to pyrethroid working group. DPR record number 254431.

	Picard 2010	***H. azteca***
Parameter	**Value**	**Comment**
Test method cited	Springborn Smithers Laboratories Protocol No.: 100808/OPPTS/10-day Hyalella/artificial sediment.	USEPA based
Phylum	Not stated	
Class	Not stated	
Order	Not stated	
Family	Not stated	
Genus	*Hyalella*	
Species	*azteca*	
Family in North America?	yes	
Age/size at start of test/growth phase	8 day old	
Source of organisms	Springborn Smithers lab culture	
Have organisms been exposed to contaminants?	No	
Animals acclimated and disease-free?	Yes	
Animals randomized?	Yes	
Test vessels randomized?	Not stated	
Test duration	10 day	
Data for multiple times?	No	10 day only
Effect 1	Mortality	
Control response 1	99% neg control/98% solvent control survival	Pooled control
Effect 2	Growth	
Control response 2	0.12 mg	Pooled control
Effect 3	Not stated	
Control response 3	Not stated	
Temperature	21-25 ℃	
Test type	Static renewal	
Photoperiod/light intensity	16 h/8 h dark; 520-950 lux	
Dilution water (overlying water)	Well water	
pH	6.9	
Hardness	72 mg/L	
Alkalinity	22-24 mg/L	
Conductivity	460 µmhos/cm	
Dissolved Oxygen	3.4 – 8.4 mg/L	

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Parameter	**Value**	**Comment**
TOC/DOC	0.54 mg/L/Not stated	
Ammonia-N	<0.01 – 0.52 mg/L	
Chemical analysis?/ Method	No	
Sediment formulated?	Yes	Method: OECD 218
Organic carbon	2.4%	
Particle size distribution (sand, silt, clay)	84%, 1%, 15%	
pH	6.8	
Percent solids	57.31%	
Sediment spike procedure	Jar rolling technique	4 h @ RT; 15 rpm
Sediment spike equilibration time	14 d @ 4°C	Mixed 2x/week for 2 h @ RT
Sediment to Solution ratio	100:175 mL	100 mL sediment = 140 g wet wt or 80.5 g dry wt
Pore Water monitored?	Yes	Results in supplemental report; not referenced
Pore water extraction method	Centrifugation	1200 *g* 15-30 min
Pore water chemical extraction	SPME	
Pore water chemical analysis	Not stated	
pH	6.9-7.3	
TOC	100-150 mg C/L	
DOC	100-140 mg C/L	
Ammonia-N	1.2-2.0 mg/L	
Redox	170-190 mV	
Feeding	1 mL of YCT daily	Per replicate vessel
Purity of test substance	94.1%	
Concentrations measured?	Yes	
Measured is what % of nominal?	73.0-98.6% in sediment spikes	81.1-102% in stock solutions
Toxicity values calculated based on nominal or measured concentrations?	Measured	
Chemical method documented?	Yes	Ext/cleanup and instrument analysis
Concentration of carrier (if any) in test solutions	0%	10 mL of acetone evaporated from sand
Concentration 1 Nom/Meas (µg/kg)	0.31/0.26	8 Reps and 10 per
Concentration 2 Nom/Meas (µg/kg)	0.63/0.53	8 Reps and 10 per
Concentration 3 Nom/Meas (µg/kg)	1.3/1.1	8 Reps and 10 per
Concentration 4 Nom/Meas (µg/kg)	2.5/2.1	8 Reps and 10 per
Concentration 5 Nom/Meas (µg/kg)	5.0/3.8	8 Reps and 10 per
Concentration 6 Nom/Meas (µg/kg)	10/8.2	8 Reps and 10 per
Control	Solvent and negative controls	8 Reps and 10 per

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Parameter	**Value**	**Comment**
LC50	3.2 (2.8-3.7)95%CI	Method: Spotaneous Logit analysis using TOXSTAT
EC50	> 8.2 ug/kg	Method: Linear interpretation method; empirically estimated
NOEC	Survival: 1.1 Growth: 0.26	Survival: Wilcoxon's rank sum test with Bonferroni Adjustment; Growth: Bonferroni's t-Test; TOXSTAT program p: 0.05 MSD:
LOEC	Survival: 2.1 Growth: 0.53	Same as above
MATC (GeoMean NOEC,LOEC)	Survival: 1.5; growth: 0.37	
% of control at NOEC	(95%/99%=96%); (0.13/0.12=108%)	Pooled controls
% of control at LOEC	(63/99=64%);(0.11/0.12=92%)	Pooled controls

Notes:
Protocol adapted from: USEPA, 2000. Methods for measuring the toxicity and bioaccumulation of sediment-associated contaminants with freshwater invertebrates. Protocol fulfills requirement of USEPA OPPTS 850.1735 Whole sediment acute toxicity invertebrates, freshwater (USEPA, 1996).

Although the study states pore water results are in a supplemental report, the data was never made available due to analytical and sample holding time issues.