Toxicity Data Summary

Hyalella azteca

Picard CR. 2010g. 10-Day toxicity test exposing freshwater amphipods (*Hyalella azteca*) to permethrin applied to formulated sediment under static-renewal conditions. Springborn Smithers Laboratories Study Number # 13656.6138, Wareham, MA. Submitted to pyrethroid working group. DPR ID # 254442.

	Picard 2010	***H. azteca***
Parameter	**Value**	**Comment**
Test method cited	Springborn Smithers Laboratories Protocol No.: 100808/OPPTS/10-day Hyalella/artificial sediment.	USEPA
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	Survival	
Control response 1	97% neg control/95% solvent control survival	Pooled control
Effect 2	Growth	Dry weight
Control response 2	0.13 mg	Pooled control
Effect 3	Not stated	
Control response 3	Not stated	
Temperature	23±1 ℃	
Test type	Static renewal	50 mL/cycle;7 cycles per day
Photoperiod/light intensity	16 h/8 h dark; 500-710 lux	
Dilution water (overlying water)	Well water	
pH	6.4-7.5	6.9-7.3 during test
Hardness	64-66 mg/L	64-72 during test
Alkalinity	19-21 mg/L	20-22 during test

	Picard 2010	***H. azteca***
Parameter	**Value**	**Comment**
Conductivity	410-450 µmhos/cm	380-400 during test
Dissolved Oxygen	6.3-8.0 mg/L during test	
TOC/DOC	0.49 mg/L/Not stated	
Ammonia-N	<0.01 – 0.49 mg/L during test	
Chemical analysis?/ Method	No	
Sediment formulated?	Yes	Method: OECD 218
Organic carbon	2.3%	
Particle size distribution (sand, silt, clay)	80%, 3%, 17%	
pH	7.1	
Percent solids	68.82%	
Sediment spike procedure	Jar rolling technique	4 h @ RT; 15 rpm
Sediment spike equilibration time	15 d @ 4°C	Mixed 2x/week for 2 h @ RT
Sediment to Solution ratio	100:175 mL	100 mL sediment = 147 g wet wt or 101 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	6.7-7.0	6.7-7.0 during test
TOC	130-180 mg C/L @ 0d	120-140 mg C/L @ 10d
DOC	120-150 mg C/L @0d	94-120 mg C/L @ 10d
Ammonia-N	6.1-7.5 mg/L @ 0d	1.4-1.9 mg/L @ 10d
Redox	210-230 mV @ 0d	190-200 mV @ 10d
Feeding	1 mL of YCT daily	Per replicate vessel
Purity of test substance	95.1%	
Concentrations measured?	Yes	
Measured is what % of nominal?	72-96% in sediment spikes	84-110% in stock solutions
Toxicity values calculated based on nominal or measured concentrations?	Measured	
Chemical method documented?	Yes	Solvent ext/SPE cleanup and GCMS/NCI analysis
Concentration of carrier (if any) in test solutions	0%	10 mL of acetone evaporated from sand

	Picard 2010	***H. azteca***
Parameter	**Value**	**Comment**
Concentration 1 Nom/Meas (µg/kg)	4.0/ 3.4	8 Reps and 10 per
Concentration 2 Nom/Meas (µg/kg)	8.0/7.4	8 Reps and 10 per
Concentration 3 Nom/Meas (µg/kg)	16/13	8 Reps and 10 per
Concentration 4 Nom/Meas (µg/kg)	32/26	8 Reps and 10 per
Concentration 5 Nom/Meas (µg/kg)	64/53	8 Reps and 10 per
Concentration 6 Nom/Meas (µg/kg)	128/100	8 Reps and 10 per
Control	Solvent and negative controls	8 Reps and 10 per
LC50 (µg/kg)	60 (53-66)95%CI	Method: Linear interpretation method using TOXSTAT
EC50 (µg/kg)	46 (34-59)95%CI	Method: Linear interpretation method using TOXSTAT
NOEC (µg/kg)	Survival: 26 Growth: 7.4	Method: Bonferroni's t-Test; TOXSTAT program p: 0.05 MSD:
LOEC (µg/kg)	Survival: 53 Growth: 13	Same as above
MATC (GeoMean NOEC,LOEC)	Survival: 37; growth: 9.8	(µg/kg)
% of control at NOEC	(93%/96%=97%); (0.12/0.13=92%)	Pooled controls
% of control at LOEC	(56/96=58%);(0.11/0.13=85%)	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.