

## Esfenvalerate

## Toxicity Data Summary

*Hyalella azteca*

Picard CR. 2010e. 10-Day toxicity test exposing freshwater amphipods (*Hyalella azteca*) to esfenvalerate applied to formulated sediment under static-renewal conditions. Springborn Smithers Laboratories Study No. 136565.6135, Wareham, MA. Submitted to pyrethroid working group. DPR record number 254436.

	<b>Picard 2010</b>	<b><i>H. azteca</i></b>
<b>Parameter</b>	<b>Value</b>	<b>Comment</b>
Test method cited	Springborn Smithers Laboratories Protocol No.: 100808/OPPTS/10-day <i>Hyalella</i> /artificial sediment.	USEPA
Phylum	Not stated	
Class	Not stated	
Order	Not stated	
Family	Not stated	
Genus	<i>Hyalella</i>	
Species	<i>azteca</i>	
Family in North America?	yes	
Age/size at start of test/growth phase	8 days 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	100% neg control/98% solvent control survival	Pooled control
Effect 2	Growth	
Control response 2	0.11 mg	Pooled control
Effect 3	Not stated	
Control response 3	Not stated	
Temperature	21 to 25 °C	
Test type	Static renewal	
Photoperiod/light intensity	16 h/8 h dark; 530-740 lux	
Dilution water (overlying water)	Well water	
pH	6.4 to 7.2	
Hardness	64-68 mg/L	
Alkalinity	22 mg/L	
Conductivity	400-420 µmhos/cm	
Dissolved Oxygen	3.4 – 8.4 mg/L	

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TOC/DOC	0.54 mg/L/Not stated	
Ammonia-N	<0.01 – 0.34 mg/L	
Chemical analysis?/ Method	No	
Sediment formulated?	Yes	Method: OECD 218
Organic carbon	2.1%	
Particle size distribution (sand, silt, clay)	71%, 7%, 22%	
pH	7.1	
Percent solids	63.79%	
Sediment spike procedure	Jar rolling technique	4 h @ RT; 15 rpm
Sediment spike equilibration time	15 d @ 2-8°C	Mixed 2x/week for 2 h @ RT
Sediment to Solution ratio	100:175 mL	100 mL sediment = 140 g wet wt or 89.5 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	6.8-6.9	
TOC	120-180 mg C/L	
DOC	95-160 mg C/L	
Ammonia-N	1.7-4.2 mg/L	
Redox	170-200 mV	
Feeding	1 mL of YCT daily	Per replicate vessel
Purity of test substance	99.6%	
Concentrations measured?	Yes	
Measured is what % of nominal?	100-120% in sediment spikes	98-110% 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)	1.0/0.90	8 Reps and 10 per
Concentration 2 Nom/Meas (µg/kg)	2.0/1.8	8 Reps and 10 per
Concentration 3 Nom/Meas (µg/kg)	4.0/3.7	8 Reps and 10 per
Concentration 4 Nom/Meas (µg/kg)	8.0/6.6	8 Reps and 10 per
Concentration 5 Nom/Meas (µg/kg)	16/15	8 Reps and 10 per
Concentration 6 Nom/Meas (µg/kg)	32/28	8 Reps and 10 per
Control	Solvent and negative controls	8 Reps and 10 per

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LC50 (µg/kg)	7.8 (7.1-8.7)95%CI	Method: Spontaneous Probit analysis using TOXSTAT
EC50 (µg/kg)	6.0 (5.7 – 6.4) 95% CI	Method: Linear interpretation method;
NOEC(µg/kg)	Survival: 3.7 Growth: 3.7	Method: Survival- Wilcoxon's Rank Sum Test with Bonferroni Adjustment; Growth- Bonferroni's t-Test p: 0.05 MSD:
LOEC(µg/kg)	Survival: 6.6 Growth: > 3.7	Same as above
MATC (GeoMean NOEC,LOEC)	Survival: 4.9; growth: NA	
% of control at NOEC	(94%/99%=95%); (0.10/0.11=91%)	Pooled controls
% of control at LOEC	(58/99=59%)	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.