Fenpropathrin

Toxicity Data Summary

Hyalella azteca

Picard CR. 2010e. 10-Day toxicity test exposing freshwater amphipods (Hyalella azteca) to fenpropathrin applied to formulated sediment under static-renewal conditions. Springborn Smithers Laboratories Study No. 13656.6137, Wareham, MA. Submitted to pyrethroid working group. DPR record number 254438.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Picard 2010</th>
<th>H. azteca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test method cited</td>
<td>Springborn Smithers Laboratories Protocol No.: 100808/OPPTS/10-day Hyalella/artificial sediment.</td>
<td>USEPA</td>
</tr>
<tr>
<td>Phylum</td>
<td>Not stated</td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>Not stated</td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>Not stated</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>Not stated</td>
<td></td>
</tr>
<tr>
<td>Genus</td>
<td>Hyalella</td>
<td></td>
</tr>
<tr>
<td>Species</td>
<td>azteca</td>
<td></td>
</tr>
<tr>
<td>Family in North America?</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Age/size at start of test/growth phase</td>
<td>7 days old</td>
<td></td>
</tr>
<tr>
<td>Source of organisms</td>
<td>Springborn Smithers lab culture</td>
<td></td>
</tr>
<tr>
<td>Have organisms been exposed to contaminants?</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Animals acclimated and disease-free?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Animals randomized?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Test vessels randomized?</td>
<td>Not stated</td>
<td></td>
</tr>
<tr>
<td>Test duration</td>
<td>10 day</td>
<td></td>
</tr>
<tr>
<td>Data for multiple times?</td>
<td>No</td>
<td>10 day only</td>
</tr>
<tr>
<td>Effect 1</td>
<td>Mortality</td>
<td></td>
</tr>
<tr>
<td>Control response 1</td>
<td>99% neg control/99% solvent control survival</td>
<td>Pooled control</td>
</tr>
<tr>
<td>Effect 2</td>
<td>Growth</td>
<td></td>
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<tr>
<td>Control response 2</td>
<td>0.15 mg neg control/0.14 mg solvent control survival</td>
<td>Pooled control</td>
</tr>
<tr>
<td>Effect 3</td>
<td>Not stated</td>
<td></td>
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<tr>
<td>Control response 3</td>
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<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>22 to 25 °C</td>
<td></td>
</tr>
<tr>
<td>Test type</td>
<td>Static renewal</td>
<td></td>
</tr>
<tr>
<td>Photoperiod/light intensity</td>
<td>16 h/8 h dark; 510-1000 lux</td>
<td></td>
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<tr>
<td>Dilution water (overlying water)</td>
<td>Well water</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>6.4 to 7.0</td>
<td></td>
</tr>
<tr>
<td>Hardness</td>
<td>64-76 mg/L</td>
<td></td>
</tr>
<tr>
<td>Alkalinity</td>
<td>20-22 mg/L</td>
<td></td>
</tr>
<tr>
<td>Conductivity</td>
<td>410-560 µmhos/cm</td>
<td></td>
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<tr>
<td>Parameter</td>
<td>Value</td>
<td>Comment</td>
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<td>-----------------------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------------</td>
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<tr>
<td>Dissolved Oxygen</td>
<td>3.4 – 8.4 mg/L</td>
<td></td>
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<tr>
<td>TOC/DOC</td>
<td>0.49 to 0.54 mg/L/Not stated</td>
<td>Dec-Jan 2009</td>
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<tr>
<td>Ammonia-N</td>
<td>&lt;0.01 – 0.29 mg/L</td>
<td></td>
</tr>
<tr>
<td>Chemical analysis?/ Method</td>
<td>No</td>
<td></td>
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<tr>
<td>Sediment formulated?</td>
<td>Yes</td>
<td>Method: OECD 218</td>
</tr>
<tr>
<td>Organic carbon</td>
<td>2.3%</td>
<td></td>
</tr>
<tr>
<td>Particle size distribution (sand, silt, clay)</td>
<td>80%, 3%, 17%</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>Percent solids</td>
<td>68.62%</td>
<td></td>
</tr>
<tr>
<td>Sediment spike procedure</td>
<td>Jar rolling technique</td>
<td>4 h @ RT; 15 rpm</td>
</tr>
<tr>
<td>Sediment spike equilibration time</td>
<td>12 d @ 2-8°C</td>
<td>Mixed 2x/week for 2 h @ RT</td>
</tr>
<tr>
<td>Sediment to Solution ratio</td>
<td>100:175 mL</td>
<td>100 mL sediment = 153 g wet wt or 105 g dry wt</td>
</tr>
<tr>
<td>Pore Water monitored?</td>
<td>Yes</td>
<td>Results in supplemental report; not referenced</td>
</tr>
<tr>
<td>Pore water extraction method</td>
<td>Centrifugation</td>
<td>1200 g 15-30 min</td>
</tr>
<tr>
<td>Pore water chemical extraction</td>
<td>SPME</td>
<td></td>
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<tr>
<td>Pore water chemical analysis</td>
<td>Not stated</td>
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<tr>
<td>pH</td>
<td>6.8-7.0</td>
<td></td>
</tr>
<tr>
<td>TOC</td>
<td>110-160 mg C/L</td>
<td></td>
</tr>
<tr>
<td>DOC</td>
<td>89-120 mg C/L</td>
<td></td>
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<tr>
<td>Ammonia-N</td>
<td>1.5-2.1 mg/L</td>
<td></td>
</tr>
<tr>
<td>Redox</td>
<td>160-190 mV</td>
<td></td>
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<tr>
<td>Feeding</td>
<td>1 mL of YCT daily</td>
<td>Per replicate vessel</td>
</tr>
<tr>
<td>Purity of test substance</td>
<td>100%</td>
<td></td>
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<tr>
<td>Concentrations measured?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Measured is what % of nominal?</td>
<td>77-96% in sediment spikes</td>
<td>83-98% in stock solutions</td>
</tr>
<tr>
<td>Toxicity values calculated based on nominal or measured concentrations?</td>
<td>Measured</td>
<td></td>
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<tr>
<td>Chemical method documented?</td>
<td>Yes</td>
<td>Ext/cleanup and instrument analysis</td>
</tr>
<tr>
<td>Concentration of carrier (if any) in test solutions</td>
<td>0%</td>
<td>10 mL of acetone evaporated from sand</td>
</tr>
<tr>
<td>Concentration 1 Nom/Meas (µg/kg)</td>
<td>2.0/1.7</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>Concentration 2 Nom/Meas (µg/kg)</td>
<td>4.0/3.4</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>Concentration 3 Nom/Meas (µg/kg)</td>
<td>8.0/6.6</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>Concentration 4 Nom/Meas (µg/kg)</td>
<td>16/13</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>Concentration 5 Nom/Meas (µg/kg)</td>
<td>32/27</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>Concentration 6 Nom/Meas (µg/kg)</td>
<td>64/52</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>Parameter</td>
<td>Picard 2010</td>
<td>H. azteca</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Control</td>
<td>Solvent and negative controls</td>
<td>8 Reps and 10 per</td>
</tr>
<tr>
<td>LC50 (µg/kg)</td>
<td>10 (9.3-12)95%CI</td>
<td>Method: Spontaneous Probit analysis using TOXSTAT</td>
</tr>
<tr>
<td>EC50 (µg/kg)</td>
<td>8.5 (7.7 – 9.4) 95% CI</td>
<td>Method: Linear interpretation method;</td>
</tr>
<tr>
<td>NOEC (µg/kg)</td>
<td>Survival: 3.4 Growth: 3.4</td>
<td>Method: Survival and growth- Wilcoxon’s Rank Sum Test with Bonferroni Adjustment with TOXSTAT; p: 0.05 MSD:</td>
</tr>
<tr>
<td>LOEC (µg/kg)</td>
<td>Survival: 6.6 Growth: &gt; 3.4</td>
<td>Same as above</td>
</tr>
<tr>
<td>MATC (GeoMean NOEC,LOEC)</td>
<td>Survival: 4.7; growth: NA</td>
<td></td>
</tr>
<tr>
<td>% of control at NOEC</td>
<td>(95%/99%=96%); (0.12/0.14=86%)</td>
<td>Pooled controls</td>
</tr>
<tr>
<td>% of control at LOEC</td>
<td>(89%/99%=90%)</td>
<td>Pooled controls</td>
</tr>
</tbody>
</table>

Notes:

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.