



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Alyson S. Favilla</b>	<b>Project Number</b> <b>J1513</b>
<b>Project Title</b> <b>The Daphnia Dilemma</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The intent of this trial of toxicity determination was to ascertain whether a plankton called Daphnia (magna) could be used as a reliable bioassay to measure the health of aquatic ecosystems. It was hypothesized that the levels of Pyrethroid-based pesticides in the water would affect the daphnia, and the results would likely reflect the said levels of pollutants.</p> <p><b>Methods/Materials</b> To begin with, two different pesticides with various levels of dilution were exposed to three daphnia magna per Petri dish, while the reproduction rate and the mortality rates of the daphnia were recorded over a period of 48 hours. Afterwards, the daphnia were removed to a purified water environment, to watch for further effects of the Pyrethroids.</p> <p><b>Results</b> Results: As the levels of mortality and reproduction dropped or rose accordingly to levels of concentration of amount of dilution of pesticide in the water, it would be apparent that the hypothesis was correct. The higher the concentration and amount, the steeper the mortality rate, the stronger the concentration, the greater the drop in reproduction by the daphnia, which gave accurate representations of amounts and concentrations.</p> <p><b>Conclusions/Discussion</b> From my findings, Daphnia can be used as a bioassay, to determine the health of our water, our oceans, and their ecosystems. It would be recommended to remove Pyrethroid and similarly based pesticides off the market, so that they cannot become run-off and pollute our coastal environment, as they have become known to show very toxic results in small aquatic invertebrates, which can steadily move up the food chain, until it reaches those who poisoned the oceans in the first place.</p>	
<b>Summary Statement</b> To use a plankton called Daphnia magna to see if they can be used as a reliable species indicator by reacting specifically to Pyrethroids.	
<b>Help Received</b> Dr. Steven Lipkin of UCI helped determine correct dilutions and use the micro-pipets correctly, Mrs. Rines (science teacher) helped edit Review of the Literature, Mr. Steven Bay of SCCWRP gave time for an interview.	