



# CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

<b>Name(s)</b> <b>Vincent A. Chen</b>	<b>Project Number</b> <b>J1105</b>
<b>Project Title</b> <b>The Use of Thamnocephalus to Analyze Water Quality of the Santa Ana River</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective was to evaluate water quality of the Santa Ana River with a "live biomarker" crustacean species ( <i>Thamnocephalus platyurus</i> ) to determine areas of pollution. Null Hypothesis: Mean values of water quality of the "control" water samples would be no different than that of the water samples taken from the Santa Ana River. <b>Methods/Materials</b> <i>Thamnocephalus</i> cysts were hatched at 30 degrees C for 30-32 hours, before being exposed to "control" or "test" water samples for 2 hours, and then fed red-colored micro-beads for 30 min. After termination with fixative, total number animals were counted as well as the number which had consumed red beads. Feeding inhibition was calculated and used to evaluate the pollution of the Santa Ana River samples vs. control water samples (Arrowhead Spring Water). <b>Results</b> The use of <i>Thamnocephalus</i> as a viable organism to evaluate water quality was established. Significant differences in water quality were found in different water samples taken from the main body of the Santa Ana River and its tributaries. <b>Conclusions/Discussion</b> Data did not support the Null Hypothesis, which was rejected. The Alternative Hypothesis was accepted: There are some areas of the Santa Ana River which are more polluted than other regions and from the control water samples. Results are discussed in terms of their predictive capacity. Results are significant because obtaining data regarding the water quality of the Santa Ana River will permit a prediction of where to focus efforts to control storm water runoff, which is the primary source of pollution of the Santa Ana River watershed.	
<b>Summary Statement</b> Thamnocephalus platyurus was used to detect polluted areas of the Santa Ana River.	
<b>Help Received</b> Guidance was received from my science teacher, Yucaipa Valley Water District, Riverside Flood Control and Water Conservation District, Department of Public Works, San Bernardino County, EPA, Riverside Waterkeeper, and my grandfather.	