



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Nathan A. Holloway	Project Number S2208
Project Title Analyzing the Toxicity of Imidacloprid on Artemia salina Cysts	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this study is to analyze the effect that Imidacloprid has on brine shrimp hatching rate and survival.</p> <p>Methods/Materials Brine shrimp eggs and Imidacloprid were commercially available. With increasing concentrations of Imidacloprid, brine shrimp eggs and hatchlings decreased accordingly. Percentages of brine shrimp that hatched and survived were found after counting under a dissection microscope and calculating the data. Integrative methods were used to find the rate of hatching and survival of brine shrimp.</p> <p>Results My results indicate that Imidacloprid is toxic to brine shrimp in the way that it inhibited the hatching of brine shrimp and decreased survival among brine shrimp with increasing concentrations of Imidacloprid.</p> <p>Conclusions/Discussion From the results it is concluded that Imidacloprid is toxic to brine shrimp. Homologies such as hemoglobin, ovaries, and a heart, which are all seen between brine shrimp and larger organisms, indicates the effect that Imidacloprid can have on larger organisms such as humans. In addition, the phenomenon known as biological magnification examines how primary consumers take in toxins from the environment and secondary consumers consume the primary consumers with the toxins, and with more and more consumption, at each consecutive step, the concentrations of toxins increase exponentially, ultimately to be found in humans at higher concentrations.</p>	
Summary Statement As seen in the decline of brine shrimp hatching and survival when exposed to higher concentrations of Imidacloprid, the effects are evident in larger organisms and the environment	
Help Received My teacher provided laboratory equipment and space, in addition to guidance in experimental design and data analysis. I independently researched scientific literature, created novel methods, collected data, and drew conclusions.	