



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Lola S. Castorina	Project Number J2205
Project Title Can Road Salt Be Used to Control the Mosquito Population?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to determine whether road salt could be used to control the mosquito larvae population in stagnant water by determining the salinity concentration required to kill 100% of mosquito larvae within 12 hours.</p> <p>Methods/Materials I first conducted 2 test trials to identify and correct potential errors and problems in my proposed methods.</p> <p>After verifying the viability of my procedure, 25 mosquito larvae were placed in 500 ml samples of pond water with varying road salt salinity concentrations from 0.9 ppt - 25 ppt (at 5 ppt intervals). All mosquito larvae were exposed to identical environmental factors (i.e. light, temperature, and homogenous pond water to maintain identical nutrient content). Three separate trials for each salinity concentration were conducted. The number of deceased mosquito larvae was recorded every hour for 12 hours to calculate mortality rate. After determining that all mosquito larvae died between 15 ppt - 20 ppt within 12 hours, I repeated the identical procedure using a salinity gradient from 15 ppt - 20 ppt at 1 ppt intervals to narrow the results to determine a more exact critical concentration level.</p> <p>Results The mortality rate of mosquito larvae reaches 100% after 12 hours at a road salt salinity concentration of 18 ppt to kill mosquito larvae within 12 hours.</p> <p>Conclusions/Discussion My experiment established that road salt could potentially be used to control the mosquito population by using it to increase the salinity of stagnant water to 18 ppt.</p> <p>While significant research has been conducted on the effect of increased acidity on mosquito larvae, almost no research has been conducted on the effect of increased salinity. Road salt is readily available to governmental agencies because it is used in large quantities to deice roads and could be an economical and efficient method for controlling the mosquito population.</p> <p>The project also found that increased salinity has no effect once mosquito larvae transition to the pupal stage which can occur in as little as 48 hours after hatching. Therefore, road salt must kill mosquito larvae within 12 hours to be effective.</p>	
Summary Statement I showed that road salt could be used to effectively control the mosquito population by increasing the salinity level to 18 ppt to effectively kill 100% of mosquito larvae within 12 hours.	
Help Received None. I designed and performed the experiments myself.	