



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Lauren M. Weetman	Project Number J1611
Project Title Electrolyzed Water: Cleaning Our Environment into a Better Future? The Study of Electrolysis of Water	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My three objectives were to: 1) Determine the antimicrobial effect of commercially produced electrolyzed water, specifically hypochlorous acid (HOCl), on E. coli; 2) Produce my own electrolyzed water and test the antimicrobial effect of hypochlorous acid produced on E. coli; 3) Determine the efficacy of hypochlorous acid over time.</p> <p>Methods/Materials 1) I collected a sample of electrolyzed water from the Sheraton Delfina hotel in Santa Monica, CA, that uses electrolyzed water for cleaning and disinfecting purposes. I tested the antimicrobial properties of the hypochlorous acid sample against E. coli by streaking agar plates with E. coli and measuring the line of inhibition surrounding sterile disks dipped in hypochlorous acid. I compared the results to E. coli streaked petri dishes with disks dipped in Lysol. 2) I produced my own electrolyzed water using an electrolysis cell and tested the hypochlorous acid's ability to inhibit the growth of E. coli. 3.) I tested the efficacy of hypochlorous acid over time by measuring free chlorine using chlorine testing strips.</p> <p>Results Neither the commercially produced sample of hypochlorous acid nor my own sample inhibited the growth of E. coli whereas Lysol was effective in inhibiting the growth of E. coli. The efficacy of the hypochlorous acid was diminished over a two-week period.</p> <p>Conclusions/Discussion 1) Hypochlorous acid produced by electrolyzing water did not inhibit the growth of E. coli. Lysol is effective in inhibiting the growth of E. coli. 2) Electrolyzed water has a relatively short shelf life and does not retain its efficacy. 3) Overall, I do not recommend using Hypochlorous acid as a disinfecting solution against E. coli. My results indicate it does not have an antimicrobial effect against E. coli.</p>	
Summary Statement The purpose of my project is to discover if electrolyzed water inhibits the growth of E. coli, if I can electrolyze water, and if the electrolyzed water retains its efficacy over a two-week period.	
Help Received I received supervision for my science teacher, Ms. Margulis. I also contacted the President of Viking Pure, a company specializing in the electrolysis of water, Mr. Larry Smith, to help me acquire the electrolysis cell.	