



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Marine Minasyan	Project Number S1518
Project Title The Effects of Second Hand Smoke on Bacteria	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project is to determine whether second hand smoke has any effect on bacteria such as E.Coli and S.Epidermidis.</p> <p>Methods/Materials Three different types of cigarette smokes were used to expose bacteria to second hand smoke in a chamber built by student. A suction vacuum was used to penetrate the second hand smoke inside the chambers. For the first part of the experiment the bacteria were cultured in an incubator, exposed to second hand smoke and later gram stained to be looked at under the microscope. The second set of bacteria were inoculated on the petri dishes and exposed to second hand smoke right away. Results were observed and recorded.</p> <p>Results The bacteria that were exposed to second hand smoke after being cultured had their cell walls broken and discoloration had occurred. The ultra light second hand smoke had the most effects. The second set which was not incubated, however exposed to second hand smoke right away, did not grow at all, no matter what type of smoke they were exposed to. The bacteria in the control group did as expected.</p> <p>Conclusions/Discussion In conclusion my hypothesis was proven correct which stated that if bacteria were exposed to second hand smoke, their growth would be inhibited and the bacteria which were first grown then exposed would have their cell walls broken down. These findings show that the toxicity of second hand smoke can even kill bacteria. Ultra light second hand smoke was most successful in breaking down cell walls between light and regular. However in the second set all three types of second hand smoke absolutely inhibited the growth of bacteria.</p>	
Summary Statement The effects of second hand smoke on bacteria.	
Help Received Mrs. Ramirez Delacruz for guidance and mental support.	