



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Marshall D.S. Carter	Project Number J0606
Project Title The Alka-Seltzer Experiment	
Objectives/Goals The purpose of this experiment was to find out whether there was an optimum amount of Alka-Seltzer to water that would pop the lid of the film canister that they were contained in. My hypothesis on this was that 1/2 of an Alka-Seltzer and 1/3 of a canister of water would propel the cap the most distance horizontally.	
Abstract Methods/Materials My materials for this were: Alka-Seltzers (containing the active ingredient, sodium bicarbonate), water (with hydrogen and oxygen), a film canister with tight-fitting lid, tape measure, yard stick, timer, and science notebook. I observed the explosive reaction between the sodium bicarbonate and water by: setting-up a third of a film canister with water and adding Alka-Seltzer, going through that process with four different amounts of Alka-Seltzer (1 whole, 3/4, 1/2, 1/4 tablet) three times each for a total of twelve rounds. I got the average distance from each amount of Alka-Seltzer and recorded my results. Following that, I repeated the set-up for each amount one time to measure the time it took for the cap to pop off. I recorded these results and graphed them.	
Results From measuring the distances, I observed that the set-up with 1 whole Alka-Seltzer sent the cap the farthest, but not by much. From measuring the times and graphing my results, I observed that the time it took for the cap to pop off was strongly correlated to the different amounts of Alka-Seltzer in the set-up, with the largest amount (1 whole tablet) taking the least time.	
Conclusions/Discussion The active ingredients in my experiment were the sodium bicarbonate in the Alka-Seltzer and the oxygen in the water. The sodium bonds with the oxygen to create the hydrogen gas which then forces the canister lid off. The second round of experimentation was to find how fast the chemical reaction would create the necessary pressure from the different amounts of Alka-Seltzer. As I decreased the amount of Alka-Seltzer by 1/4 tablet increments, the time increased by approximately 8 second increments. If I did this again, I would repeat the process for each amount three times and calculate an average for each to minimize the effect of errors in my set-ups.	
Summary Statement This project was about observing the physical results from the chemical reaction of sodium bicarbonate (Alka-Seltzers) and oxygen (in water) creating hydrogen gas in a confined space (a film canister).	
Help Received My father assisted me with setting up my experiment so I could measure my results accurately. My mother helped me with the display board and this registration form. I did the rest of the work myself.	