



CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY

<b>Name(s)</b> Robin G. Lillie	<b>Project Number</b>  31330
<b>Project Title</b> What Is the pH of Soda? And What Causes It to Change?	
<b>Abstract</b> <b>Objectives/Goals</b> My goal in this project was to find the pH of soda and see what caused it to change. Coca-Cola was tested in different containers, at various temperatures, with different flavors, when ice was added, and as the soda went flat. <b>Methods/Materials</b> Using a LabQuest and pH probes, the pH of Coke was recorded upon opening and hourly for 14 hours. It was then recorded at 12 hour intervals for the following 48 hours as the soda lost its carbonation. The pH was tested in aluminum, plastic, and glass containers to see if packaging material mattered. Seven different varieties of Coke were tested to see if sweeteners changed the pH. The pHs were recorded on standard Coca-Cola at different temperatures. They were also recorded over time, while being heated from 0°C to 80.3°C and sitting on the counter with ice cubes in it. <b>Results</b> There was not much change in pH as the Coke went flat. There was no significant difference in pH between the types of container. Temperature made a difference. It appeared that as the temperature increased the pH decreased. This was consistent in all temperature tests. The Coke sweetened with sugar had a lower pH than those containing aspartame. <b>Conclusions/Discussion</b> Since the pH did not change much as the soda lost its carbonation (carbonic acid), phosphoric acid which is added as a preservative and for tangy flavor could be responsible. The soda container didn't really affect the pH. This made sense since a company like Coca-Cola would not want their products to be inconsistent. It was interesting to see the different sweeteners used in Coke changed the pH values slightly. Sugar, aspartame, and Splenda react differently in soda or have slightly different formulations. I have concluded that the variable that made the most difference in changing pH was temperature. All the tests done with temperature showed a decrease in pH with an increase in temperature.	
<b>Summary Statement</b> I looked at the pH of Coca-Cola and tested to see which factors caused the pH to change.	
<b>Help Received</b> Dave Carr, Butte College Chemistry Department, let me borrow a LabQuest, pH probes, temperature probe, thermometer, and pH 4.0 and 7.0 buffers. My mom proofread my report, showed me how to calibrate the pH probes and take care of them, helped me understand more about pH, and bought sodas.	