



CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s) Sameer Ahmed	Project Number J2101
Project Title Guess What's Cooking?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Objective: My objective was to test different types of metal cooking pots to determine which one would leach the most amounts of metal in a 25% citric acid solution boiled for 30 minutes.</p> <p>Goal: To be able to determine which cooking pot leached the most amount of metals into the citric acid solution.</p> <p>Tested: Cast iron, aluminum, stainless steel, and nonstick pots.</p> <p>Methods/Materials Methods: 1.) Make citric acid solution; 2.) Boil 200 mL of the solution in each pot for 30 minutes; 3.) Place boiled solution samples into test tubes and add chemical indicators; 4.) Place test tubes with chemical indicators into the spectrophotometer; 5.) Compare results</p> <p>Materials: 2-4 quart aluminum cooking pots; 2-4 quart stainless steel cooking pots; 2-4 quart cast iron cooking pots; 2-4 quart nonstick pots; Spectronic 20 Spectrophotometer; Spectrophotometer vials; Test tubes; 4- Test tube racks; 2 lbs- Citric acid; 3 liters- Deionized water; Lab coat; Paper towels; 8 Hotplates; 1-Magnetic mixer; 2- 4000 mL glass flasks; 1- 2 liter glass beaker; 1- 250 mL glass beaker.</p> <p>1- Scale; 1- Scale tray; 1- Spoon; 8 Timers; 1- Safety goggles; 1- Face splatter shield; Latex gloves; 2- Heat resistant gloves; 4 drops of 6 molar of HNO₃; 5 mL of 1 molar of KSCN; 2 ml of Na₂CO₃; 5 mL of a 0.1 molar solution of Na₂S.</p> <p>Results All of the cooking pots showed traces of leaching. Cast iron leached the most Aluminum leached the second most Nonstick leached the third most Stainless Steel leached the least</p> <p>Conclusions/Discussion Through using chemical indicators and a spectrophotometer, I was able to conclude that cast iron leached the most.</p>	
Summary Statement I tested different types of metal cooking pots to determine which one would leach the most amounts of metal in a 25% citric acid solution boiled for 30 minutes using chemical indicators and a spectrophotometer.	
Help Received Used lab equipment at Cochise College, Arizona under the supervision of Mrs. Tasneem Ashraf; My Science and English teachers helped proofread my board. My parents helped me build support systems and attaching all needed items to my board.	