



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Samir Malhotra</b>	<b>Project Number</b> <b>S0508</b>
<b>Project Title</b> <b>Correlation of Temperature to Bisphenol-A Release from Polycarbonates</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Polycarbonate containers are widely used for food and beverage products. These containers are frequently exposed to heat/sunlight for long periods of time. Current study was undertaken to see if there is any correlation between temperature and BPA leaching in different polycarbonate products. <b>Methods/Materials</b> For conducting my research, I used Reverse Phase-High Performance Liquid Chromatography (Agilent 1100 series). The mango juice, ice tea, and water bottles were incubated at room temperature or placed in an incubator at a high temperature for different time periods. Samples were taken from these bottles and transferred to glass vials. The glass vials were stored in the refrigerator until RP-HPLC analysis. Calibration curves were made using a whole range of BPA concentrations diluted from the stock BPA dissolved in methanol solution. The limit of detection (LOD) was found to be 0.5482 ng/mL and the limit of quantification (LOQ) was found to be 0.229275 ng/mL. <b>Results</b> My data shows that there is no correlation between temperature and BPA leaching from polycarbonate bottles. BPA leached into water at about 168 ng/mL, with less BPA leaching into either the mango juice (27.28 ng/mL) or the green tea (5 ng/mL). Less BPA was observed leaching into either the mango juice or green tea at an elevated temperature than at room temperature, but this effect was not observed in water. Significant amounts of BPA leached when water bottles were left at room temperature for a short period of time. <b>Conclusions/Discussion</b> These observations, together with the finding that BPA appears to bind or adsorb directly to at least one component of green tea, suggest that leaching of BPA into aqueous beverages can be masked by binding or adsorbing to components of the beverages and that heating can remove the bound BPA species from the solution. The present study supported my hypothesis that there is no correlation between temperature and BPA leaching from polycarbonate bottles. I would like to investigate the nature of binding between different species and BPA in several drinks.	
<b>Summary Statement</b> Is there a correlation between temperature and bisphenol-A leaching from polycarbonates?	
<b>Help Received</b> Used lab equipment at Amethyst Life Sciences Inc. in Thousand Oaks	