



# CALIFORNIA STATE SCIENCE FAIR 2013 PROJECT SUMMARY

Name(s)

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Project Number

33884

Project Title

## Microwave Safe: Determining Bisphenol A Leaching in Microwave-Safe Packaging Using GC/MS

### Abstract

#### Objectives/Goals

Bisphenol A (BPA), a hormone-disrupting substance that has recently been discovered as being dangerous to humans, has quietly and dangerously existed under our noses since the 1950s. The focus of my science project was to test whether BPA leaching occurred in commercial microwave-safe plastic packaging during the cooking process because the epoxy lining used to seal canned food products contain plastic.

#### Methods/Materials

To test this, I gathered four different types of microwaveable products made by different companies. I used four water samples collected from each container that were allowed to sit for 48 hours without microwaving. I microwaved each container for two minutes with a water sample, transferring these into glass containers. All eight samples evaporated at room temperature and were taken to Professor Kimberley Cousins at Cal State San Bernardino (CSUSB) for analysis using the Gas Chromatograph/Mass Spectrometer (GC/MS). Professor Cousins, myself and graduate assistant Jeffrey Yang prepared each trial sample with acetonitrile to test for the presence of BPA. Each of the samples was then analyzed for the presence of BPA using GC/MS.

#### Results

My hypothesis was that BPA would be leached into the microwaved samples. Luckily, this was proven wrong and no BPA was found in any of the samples.

#### Conclusions/Discussion

No BPA was found in any of my tested samples. Other chemical compounds were identified in the microwaved samples including various steroids and other unidentified plastics. These could be the basis for furthering this science fair project as I have not yet located research or information regarding the leaching of steroids during the microwave cooking process and am curious to whether there are any related health issues that we are not aware of.

#### Summary Statement

To determine whether or not the heating of microwave-safe packaging will result in the leaching of Bisphenol A.

#### Help Received

Use of the Gas Chromatography/Mass Spectrometry (GC/MS) at California State University San Bernardino under the supervision of Dr. Kimberley Cousins in the Organic Chemistry Laboratory.