



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Celeste E. Wychopen	Project Number J1136
Project Title The Candle Wax that Burns with the Least Amount of Particulate Emissions	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to determine which of three common candle waxes (soy, beeswax and paraffin) would emit the least amount of particulate matter (soot, etc.) when burned in votive candle form.</p> <p>Methods/Materials I made four identical candles from each of the three waxes. I used German coreless, freestanding, four-inch wicks for uniformity. I burned each of these candles in a controlled testing environment. Particulate emissions from the candles were collected on Melitta unbleached #6 cone coffee filters supported by wire frames. The filters were taken to a laboratory at a Junior College and weighed on a milligram scale before testing. I controlled for drafts using standard banker boxes placed over candles during burning. The candles were burned for two hours. The filters were placed in sealed plastic bags and weighed again. Three tests were performed for each type of candle.</p> <p>Results At the conclusion of the experiment all of the filters weighed less. However, the beeswax filters consistently weighed the least followed by the soy filters and then the paraffin.</p> <p>Conclusions/Discussion I concluded that during testing the filters were dehydrated by the heat of the candle flame. However, I believe that I was still getting accurate readings regarding the particulate emissions of each candle; therefore I have deemed my hypothesis correct. The beeswax candle had the lowest particulate emissions</p>	
Summary Statement I wanted to determine which type of candle wax emitted the least amount of particulate matter.	
Help Received Phyllis Ashmead, assisted with candle making; father helped with overhead arch and general experimental advice; family edited and proofread all work, milligram scale was used at Columbia Community College.	