



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Rachel G. Robertson</b>	<b>Project Number</b> <b>S0216</b>
<b>Project Title</b> <b>Can Recyclable Plastics Make Asphalt Stronger?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this experiment was to study whether combining household Recyclable Plastics #1-7 as an additive in asphalt would improve the strength of asphalt.</p> <p><b>Methods/Materials</b> Two experiments were performed to test this: a tension test to determine its plasticity and strength and a torsion test to determine its ability to withstand rotational strain.</p> <p><b>Results</b> The tension test showed that the addition of plastic to asphalt usually results in a significant reduction in its plasticity. At the same time, there is a significant increase in the overall strength or resistance to deformation of the plastic- asphalt mix when compared to plain asphalt. The torsion test revealed that while the addition of most plastics results in reduced ability to withstand rotational strain, plastic #1 showed a significant increase in the that ability.</p> <p><b>Conclusions/Discussion</b> According to my findings in the tension test, I conclude that asphalt is stronger by mixing Plastic #4 or Plastic #5 with it. Mixing Plastics # 1,2,4, and #6 with asphalt does not make the asphalt stronger.I can however conclude that a that the above asphalt plastic mixture cited will make a stronger, more flexible road. The benefits of a stronger asphalt would be most useful in a hot region.The addition of Plastic #1 (Polyethylene terephthalate) actually results in a significant increase in that ability</p>	
<b>Summary Statement</b> The purpose of this experiment was to study whether combining household Recyclable Plastics #1-7 as an additive in asphalt would improve the strength of asphalt.	
<b>Help Received</b> Professor Carl Monismith helped by providing asphalt materials and equipment. Chinese Christian Schools provided both the facilities and the equipment for some experimental work. My Dad and Mom, Don and Krista Robertson helped with their ideas, stimulating discussions, and time devoted to the	