



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Brian J. Bornemann</b>	<b>Project Number</b> <b>J0803</b>
<b>Project Title</b> <b>Solar Water Distillation</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Can salt water be converted to drinking water using solar energy, and if so, what glazing material would perform the best? <b>Methods/Materials</b> The project involved the construction of a 5 chamber solar still, to test 5 different glazing materials including window glass, tempered glass, Plexigals, prismatic acrylic and corrugated fiberglass for best performance. All other variables remained the same. The still was placed at a 25% angle and salt water was poured into the top of each chamber. The condensation caused by the heat of the sun was then collected into graduated tubes for recordation during tests conducted over 2 consecutive days. <b>Results</b> The solar stil performed well and produced drinkable water out of salt water. Although there was a weather variable of 4 degrees temperature between the two days of testing, the tempered glass clearly out-performed the other glazing materials on both days. The Plexiglas and prismatic acrylic came in 4th and 5th on both days. <b>Conclusions/Discussion</b> My tests demonstrated that Plexiglas and prismatic acrylic were unsuitable glazing materials for efficient solar water distillation. The plastics were unable to stand up to the heat and warped significantly. My tests also demonstrated that tempered glass worked best as glazing material, however corrugated fiberglass and regular window glass both performed well. I would be interested in testing those materials further, and in mathematically modeling the performance.	
<b>Summary Statement</b> This project consists of the construction of a solar water distillation still and testing of 5 different glazing materials for performance.	
<b>Help Received</b> Dad helped with still construction, Mother helped with report.	