



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Samantha M. Nishimura	Project Number J1026
Project Title Desalination Using Solar Power	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of my project is to test whether the use of black paint or aluminum foil will facilitate solar desalination. My hypothesis was that the aluminum foil desalinators would be the most effective because they would reflect the sunlight back into the water.</p> <p>Methods/Materials</p> <p>Methods I built 9 identical solar desalinators. I covered the bottom on 3 of them with aluminum foil, and painted the bottom of 3 others black. The last 3 served as my control group, so I left them plain. I filled the desalinators with 2 cups of ocean water and left them outside undisturbed, from 8 am to 2 pm. Every 2 hours I recorded the temperature of the ocean water inside the desalinators and also the temperature of the day. At the end of the day, I measured the amount and salinity of the collected condensate. I re-tested all the desalinators on 2 more days, which showed that regardless of the weather, the black desalinators are the most effective in solar desalination.</p> <p>Materials Nine 1- gallon jugs; Nine ½ -liter water bottles with caps; Nine flexible straws; Ocean water samples; Aluminum foil; Black paint; Saran wrap; Tape; Scissors/utility knife; Awl; Propane torch; Eyedropper; Thermometer; Glue; Hand held salinity refractometer; Nine small measuring cups; 10 ml syringe.</p> <p>Results</p> <p>Results Contrary to my hypothesis, the aluminum foil desalinators produced the least amount of condensate. The black desalinators generally had the highest temperatures throughout the day, which accounts for the high amount of condensate collected, compared to the plain and aluminum foil desalinators. All of my readings were zero salinity which shows that solar power does effectively desalinate ocean water.</p> <p>Conclusions/Discussion</p> <p>Conclusion The results of this experiment disagreed with my initial hypothesis. The black desalinators were the most effective and had the highest temperatures over the aluminum foil and plain desalinators. Air pockets between the aluminum foil and the sides of the jug may have acted as insulating zones which slowed the heat transfer. Black surfaces act as "thermal collectors" by absorbing light and generating heat. This experiment also shows that the air temperature is directly proportional to the amount of condensate</p>	
Summary Statement My project consisted of building nine desalinators and testing whether the use of black paint or aluminum foil would be the most effective in ocean water desalination using solar power.	
Help Received My father helped me with the power tools in cutting the 1 gallon water jugs.	