



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Nikki Mercado	<b>Project Number</b> <b>J0822</b>
<b>Project Title</b> <b>Purification of Water through Solar Energy</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Many people live without clean water. Governments recommend that people boil water, but they do not do that for the following reasons: 1)people don't believe in the germ theory of disease, 2)they think the fuel is too limited or costly, 3)people think the heat and smoke are unpleasant. My goal is to introduce to these people that they can purify their water without the bad heat, smoke, or cost.</p> <p><b>Methods/Materials</b> To set up my project I made a solar cooker out of aluminum foil, cardboard, black painted can, and a soda bottle. I also used other water purifiers like a black pan, copper pot in a basket of leaves, heated by Fresnel lense, and a regular black can in a soda bottle. Since the solar cooker turned out to be the best water purifier, I pored the contaminated water into the black painted can of the solar cooker. I then put that can inside the soda bottle by cutting the top half. I put that bottle on the cardboard wrapped in aluminum foil. Next, I placed this solar cooker outside in the sun, checking on it every 15 minutes to see if it had moved or what temperature it was by looking at the thermometer I had placed in the can. As soon as the thermometer reached a temperature of 150 degrees Fahrenheit, I waited 6 more minutes to make sure it stayed at that temperature. Then, I took the black can out of the soda bottle. Into one of my sample bottles, I pored the water and the testing chemical. I put the sample bottle in the incubator I made out of cardboard box and a light bulb and let it sit there for 24 hours. I, of course, put the water in the incubator before I put it in the solar cooker to make sure it was truely contaminated water. As soon as it was 24 hours, I checked the water sample to see if the chemical made it yellow or clear (if it is yellow the water has bacteria in it, but if it is clear, it does not).</p> <p><b>Results</b> The water turned out clear.</p> <p><b>Conclusions/Discussion</b> In conclusion, I know now for sure that water can be purified using solar energy at a temperature less than boiling, as I stated in my hypothesis. But I feel this area of research needs to be recognized by more people. I think more testing is needed for final results to this experiment. So, I hope, by my investigation, I am able to educate these people that can not afford purified water to realize that boiling is not the only way. I want to help these people by finding a new way to purify their water through solar energy.</p>	
<b>Summary Statement</b> I purified water at a lower temperature than boiling, using solar energy as my heating source.	
<b>Help Received</b> Used water purification chemical equipment under supervision of my grandfather (he knew how to use it)	