



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Jeffrey D. Chen	Project Number J2107
Project Title How Clean Is Your Water?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this experiment is to test which method of purifying water is the best, filtering, iodine treatment, or solar treatment.</p> <p>Methods/Materials The main method I used for this project is the gram test which is a test that allows me to differentiate gram negative and gram positive bacteria as well as stain them. I also grew the bacteria using agar so that I will be able to see and identify the bacteria better. The materials I used were, a Brita Water filter, a glass bottle, three iodine tablets, liquid Gram's iodine, safranin, crystal violet stain, acetone alcohol, agar, immersion oil, medicine dropper, dimpled microscope slides, slide covers, 9 Petri dishes, a microscope, tap water, pond water, and a source of heat or a small fire.</p> <p>Results After completing the whole experiment, I found that the portable water filter did the best job in purifying the river water. The filtered water samples always had relatively less bacteria and the size of the bacteria was smaller as well. The iodine treated samples had a little more bacteria and they were larger. The solar treated samples had the greatest amount of bacteria and the largest bacteria compared to the other methods of purifying water. Therefore, I concluded that filtering was the best method of water purification.</p> <p>Conclusions/Discussion Based on the result of this experiment, my hypothesis was correct. What surprised me the most, however, was that the solar treatment did not disinfect the water as much as iodine. From my research, iodine did not seem like a reliable purifier. Instead, the iodine tablets purified the water almost as well as the filter. The tablets did turn the water yellow, however, so it would seem to be healthier to use a filter than to add chemicals to the water. This experiment is mostly directed toward campers who may not have a clean source of water to drink. Filtering, iodine tablets, and solar treatment are common ways for campers to purify water, but they may not know which method is the most effective. By doing this experiment, I have concluded that a portable water filter would be the best method for campers to purify river water. I would like to thank my parents and sister, who drove me around to buy materials, and the Ukiah High School biology teacher who allowed me to interview him and who loaned me a few materials that were vital for this experiment.</p>	
Summary Statement After testing the filter, iodine, and solar treatments affectiveness, I found that filtering purified the water the best.	
Help Received High school biology teacher allowed me to interview him and borrow some supplies.	