



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Tyler White	Project Number 36133
Project Title Biosand Filter: Which Model Works Best?	
Abstract Objectives/Goals In my experiment, I am testing the effectiveness of adding charcoal (activated carbon) layers into the traditional biosand filter build and discovering whether the addition of this compound is beneficial to the system. I hypothesized that the charcoal will indeed be a very beneficial component in this apparatus. Methods/Materials I used water quality test kits to determine the presence of bacteria, lead, pesticides, nitrates, nitrites, pH, hardness, and chlorine in three different water samples. These samples came from a reservoir at Jim May Park in Santa Maria, a pond inside Waller Park in Santa Maria, and from the Pacific Ocean at Avila Beach, CA. I tested each sample before and after running it through both of the filters. I recorded all the data in tables for each specific sample and analyzed the numbers for any changes or continuities. Then I did my second test where I added lead and a pesticide into tap water and tested the collected water for the presence of those two substances only. Results I found that the original filter worked extremely well at filtering out impurities but the modified filter did better, especially at pH and hardness. I found that the pesticide passed through both filters while the lead only passed through the control filter. I had succeeded in filtering out lead from water by using activated carbon. Conclusions/Discussion The performance of the modified biosand filter for removing impurities was more effective than that of the traditional biosand filter. This means the modified filter can provide a significant improvement in water filtration systems all over the world, especially in third world countries.	
Summary Statement I modified a biosand filter for the better since it functioned significantly better than the original.	
Help Received None. I designed, built, and performed everything myself.	