



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Mona L. Patterson	Project Number J1818
Project Title How Do Plants React to Different Types of Greywater?	
Objectives/Goals My experiment began with two questions. First, can grey water be used to water landscape plants? Secondly, I wanted to know if there was a difference in the growth of plants watered with grey water that used eco friendly laundry detergent versus grey water that used non eco friendly laundry detergent.	
Abstract Methods/Materials I planted three 1-inch tall by 1-inch wide plants in the same plastic pots using the same potting soil. I watered the plants once a week over eight weeks. I watered the plants with the rinse water from our washing machine that contained eco-friendly and non-eco-friendly laundry detergents. I also watered a control plant with regular tap water. I measured each plant once a week for 8-weeks, took notes on the growth patterns of the plants, and documented my research with photographs. I ran two trials of my experiment. The first trial was in the fall and the second was in the spring. I wanted to make sure that any difference in sunlight didn't affect the outcome and wanted to make sure the results were similar.	
Results I learned that the plants watered with tap water and eco friendly grey water grew the best in both trials. The plant watered with tap water was slightly larger and fuller in the second trial, but the eco friendly grey water plant was larger and fuller in the first trial. Both plants stayed green, flowered and had regular weekly growth. So, to my first question, I can safely conclude that plants can be watered with grey water and thrive. The real difference was the growth of the plant watered with non- eco friendly detergent grey water. This plant in both trials did not grow as large as the other plants, had a lot of yellowing in the leaves, and dropped its flower buds. The plants watered with non eco friendly grey water grew only one third the size of the other plants. As such, there is a real difference in how different detergent types affect the usability of grey water.	
Conclusions/Discussion In conclusion we can definitely re-use the grey water from our laundry in our gardens providing we use eco friendly detergents in the wash. Grey water using non eco friendly detergents adversely affects plant growth. Non eco friendly detergents contain salts that build up in the soil over time. These salts change the soil PH making the soil more alkaline. Therefore, using Eco Friendly detergent in any laundry where we want to reuse the rinse water will be a must!	
Summary Statement I found that plant growth is affected differently by grey water which contains Eco Friendly and Non Eco Friendly laundry detergents.	
Help Received None. I designed and performed the experiment myself.	