



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Anita Sarkar	Project Number S1821
Project Title Filtering Contaminants Saves Lives	
Abstract Objectives/Goals I investigated the importance of filtering polluted water using three different pollutants in varying concentrations mixed with 200 milliliters of water. For accuracy, I tested each pollutant in each concentration and the control group grown in distilled water five times. To observe the severity of the effects of water pollution, I grew pinto bean plants in polluted water and compared their growth to that of plants in filtered water. Any reduction in average plant growth rate of the pinto bean plants was a measure of water toxicity. Methods/Materials I grew 65 pinto bean plants (12 for pollutants in varying concentrations for filtered and unfiltered solution, five of each type, and five for the control group) in potting soil. Once stable, I transferred the plants from the soil into a mixture containing 200 milliliters of water and a varying concentration of NaCl, motor oil, and Na ₂ SO ₄ . I recorded plant growth for a week. Results All of my experiments with both NaCl and Na ₂ SO ₄ solutions gave the pinto bean plants several symptoms of phytotoxicity: dry leaves, brown root-tips, and slow growth. The plant was clearly becoming dehydrated. The pinto bean plants grown in 2.5% and 5% motor oil with distilled water did not die; however plant growth was hindered. Because many of the roots were covered with motor oil, water absorption was reduced, which also had a significant effect on plant growth. Conclusions/Discussion My data tends to show that my hypothesis was correct; pollutants have serious effects on plant health. Water filtration is definitely necessary. This is demonstrated in all of my filtered NaCl and Na ₂ SO ₄ experiments. This may have been because my filter was not able to trap the small, dissolved salt ions. Although my homemade filter was not very effective with the water-soluble salts, it was extremely effective in filtering out motor oil.	
Summary Statement I used motor oil, table salt, and sodium sulfate in varying concentrations per 200 milliliters distilled water; I compared the growth of plants grown in filtered water versus unfiltered water versus the control group.	
Help Received I borrowed many beakers from Mr. Garabedian; my father helped me paste everything on the board	