



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Sanika Mahajan; Varsha Swamy	Project Number 34573
Project Title Effect of Sediments Containing Polycyclic Aromatic Hydrocarbons	
Abstract Objectives/Goals Our purpose was to ascertain whether or not parking lot and playground sediment contain compounds that can harm aquatic animals, and if they did, to determine the LC50 (or concentration at which 50% of the population perish) of each of them. . Our aim was to reveal the impact of each substance on urban runoff, since Daphnia Magna are prime examples of organisms affected by the runoff of toxic sediment into streams and rivers. Methods/Materials Our procedure consisted of using a broom and pan to sweep up sediment, operating a scale accurate to .0001 grams to weigh the sediment, and conducting a bioassay on the Daphnia Magna for 24 hours with different concentrations of each type of sediment in different habitats. After the bioassay was conducted twice, we took the average death rate for each concentration from the two trials. We then used Microsoft Excel to create graphs with the x-axis being the concentration, and the y-axis being the average number of deceased Daphnia. We then created a line of best fit that showed where the LC50 of each of the sediments would be. Results The data showed that the LC50 of the parking lot sediment was 53 mg/L and that of the playground sediment was 72 mg/L. Conclusions/Discussion According to our research, Daphnia Magna have been proven to accurately reflect the reactions of many aquatic organisms, which means that our results will apply to several other species. Parking lots and playgrounds are widespread facilities, oftentimes appearing within miles of freshwater, and there is a great probability of sediment from these areas polluting the water. Our results show exactly what concentration of the sediments is needed to wipe out half of many freshwater populations, and further research can be done in tandem with our study in order for scientists to be able to minimize the detriments of urban runoff from parking lots and playgrounds.	
Summary Statement We conducted a bioassay to ascertain the toxicity levels of parking lot and playground sediments, which often contribute to urban runoff.	
Help Received Used scale at Cupertino High School under the supervision of Daniel Stavis (teacher)	