



CALIFORNIA STATE SCIENCE FAIR 2008 PROJECT SUMMARY

Name(s) Maddison J. Goss	Project Number J1007
Project Title Mission Bay at Risk: Investigating Soil and Water Contaminants	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I read an article on October 26, 2006 in the Union-Tribune that an area around San Diego's Mission Bay had once been a hazardous waste landfill. I wondered if substances from the unlined landfill might be contaminating Mission Bay. I hypothesized that unacceptable levels of lead, copper, chromium, or iron might be present in water and soil samples.</p> <p>Methods/Materials For this experiment, a total of 205 tests were performed. I collected water and soil samples from areas around Mission Bay. The test site areas were Fiesta Island (north, south, east and west), Sea World Research Center (and the landfill which covers 120 acres), the east side of the Sea World Parking Lot and the foundation of the attraction Journey to Atlantis. Water samples were taken approximately 30 cm from land. The soil samples were collected after removal of approximately 10 cm of the top soil. After 24 hours the soil and water samples were tested for contaminants. The soil was reduced to a liquid by adding 120 mL of distilled white vinegar added to 2.5 cc soil sample (in order to test for metals in non-liquid materials the substance must be combined with a liquid and the metal leached).</p> <p>Results The allowable level for lead in soil according to #Federal EPA Standards# is 400-500 ppm. The #CA Proposition 65# maximum allowable level for lead in soil is 350 ppm. In seven of the soil samples I tested, the estimated lead content was 1250 ppm. Six of the seven lead contaminated soil samples were taken from areas over the old landfill, the landfill is immediately east of the Sea World parking lot. For chromium, the highest amount I obtained was 30 ppm in three samples located over the hazardous waste landfill. 150 ppm copper was the greatest level I recorded. I found this amount at two test sites, both on the landfill. The highest level for iron was 750 ppm in seven tests, all located over the old landfill. In my water samples, the lead high was three ppm, slightly north of the landfill; copper's high was 1.5 ppm north of Fiesta Island. Also, the high for iron was located north and north-east of Fiesta Island in three samples; 0.5 ppm was the high for chromium located on the north-east side of Fiesta Island.</p> <p>Conclusions/Discussion It is possible groundwater carries lead and other metals through contact with the, unlined dump site deposits these contaminants I San Diego's Mission Bay area water and soil.</p>	
Summary Statement This project examines possible contamination in soil and water through contact with an unlined, hazardous waste landfill at San Diego's Mission Bay and Sea World locations.	
Help Received Mother and Father made sure I tested safely; science teacher gave specific areas to research	