



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Emily A. Dellinger	Project Number S1709
Project Title Got Clean Water? Studying the E.coli and Coliform Count in Mission Bay and How It Affects Rowers	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective was three-fold: 1) test the Coliform and E. coli counts at three sites in Mission Bay 2) evaluate the health of rowers who frequent the waters at these three sites 3) correlate the findings of the water samples with the results of the rower health surveys.</p> <p>Methods/Materials 3 water samples were taken at 3 locations for a total of 9 samples on 9 days. Sites were where rowers entered the water. Days varied in tem and tide conditions. Samples were taken at high/low tides. Testing method Quanti Tray 2000 was used; provides fast/accurate counts of Coliforms and Fecal Coliforms in marine water. The water was processed using a 1:10 dilution. Agar was added and incubated for approx 18 hrs. Results were read and recorded. Health Surveys: A rower health survey was distributed to 5 local rowing clubs, based on voluntary participation. The questions were decided upon after researching common symptoms that may develop after exposure to Coliform and Fecal Coliform native to Mission Bay and those commonly complained of at one club were added to eval if other rowers had similar complaints.</p> <p>Results Ca. State Standards for samples of marine water for Coliforms should not exceed 10000 organism/100mL of water. This study found the levels within this standard. Ca. State Standards for Fecal Coliforms should not exceed 400 organisms/100mL of water. Over 50% of the time (5/9 days) those standards were exceeded at 1, 2, or all sites. Rower health surveys: top five symptom complaints for rowers were: dry skin on legs, rash on legs, cuts that won't heal, increase in colds and increase in appetite. Over 50% of the rowers who answered these surveys had at least two of the symptoms. Rowers who had been rowing < 1 yr had different symptoms (skin rashes and colds) than rowers that had been rowing for > 1 yr. (cuts that would not heal and dry/itchy skin).</p> <p>Conclusions/Discussion This study tested for indicator bacteria in the waters of Mission Bay. It may be suggested that higher levels of indicator bacteria offer higher health risks. Rowers from all over San Diego, with little in common beside entering Mission Bay waters 5-7 days/wk, offers highly suggestive correlations. although it cannot be directly stated that the samples taken were the cause of all the rowers physical symptoms, it can be speculated that they are related. It may be suggested that more beach clean up and water monitoring programs be instituted to keep the bay safe.</p>	
Summary Statement Water testing in Mission Bay and it's possible relationship to the health of local rowers.	
Help Received Mother and sister typed report. Justin Hohn from San Diego Coast Keepers lent equipment and expertise.	