



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Suyeon Ju	Project Number J1112
Project Title Korea and San Diego: What Is the Difference in Water Quality?	
Objectives/Goals The objective of this experiment is to compare the water quality of three cities located in Korea and U.S.A., specifically Gangneung, Seoul, and San Diego.	
Abstract Methods/Materials In this experiment, several important and well-known water sources from each city were selected and located for water testing. To make sure results were accurate and free of human error, three samples were taken from each source. Each water source was tested for the nine parameters temperature, pH, dissolved oxygen, biochemical oxygen demand, nitrates, turbidity, total dissolved solids, hardness, and fecal coliform. After every test was completed, the results were calculated and averaged using the National Sanitation Foundation (NSF)'s graphs and curves. Using the NSF's calculator, each city was given an overall water quality index value that determined how bad or excellent the water in that city was, and these values were used for comparison.	
Results The results of each test were averaged using the NSF's water quality index calculator to find the overall water quality of each source, and later, the water quality of each city. Every water source had three trials for each test, and there were 14 sources in all. The results were averaged into water quality index values. Each city was given a grade or value that was averaged from the results of each test. Those values range from 0-100, 0 being bad water and 100 being excellent. Gangneung had an overall water quality index of 80, Seoul had a value of 76, and San Diego, 81.	
Conclusions/Discussion The overall water quality indexes of the three cities were very comparable and close to the hypothesis. Surprisingly, the water quality from Seoul had a larger difference with Gangneung compared to San Diego, even though they are located in the same country. The difference in regions and environmental surroundings may have caused these results. This information will help the water authorities in the source area to improve the quality of the water and the surrounding environments.	
Summary Statement In this experiment, several water sources located in three cities in Korea and U.S.A. were tested for the nine water quality parameters, and the results obtained were averaged and compared.	
Help Received Mrs. Elaine Gillum provided the water testing kit; Professional Geologist Brian Oram mentored me and guided me through my experiments; parents and relatives drove me to different water sources and proofread my writing; sister assisted in the clean-up process of testing.	