

Greater San Diego Science and Engineering Fair 2015 PROJECT SUMMARY

Name: Samiha Reza

Grade: 8 **School:** Marshall Middle School **Teacher:** E. Gillum

Project Title:

Arsenic and Water Quality in Bangladesh and America

Abstract

Objectives/Goals

The objective of this project was to test and compare a number of sources in both America and Bangladesh for arsenic and various parameters like pH, total dissolved solids, oxidation reduction potential, and turbidity.

Hypothesis

The arsenic levels will be 25-50 ug higher in tube wells, mostly intermediate, in Bangladesh. pH levels will be 0.3 higher in Bangladesh compared to America. Oxygen reduction and potential levels will be 30-40 mV higher in America sources than Bangladesh. Total Dissolved Solids levels will be apprx. 100 units higher in ponds in both America and Bangladesh and lastly turbidity will be 20-30 units higher in Bangladesh.

Methods/Materials

Water quality testing was done with multiple probes and strips for the various parameters and arsenic was tested with an arsenic kit. All of the water samples were collected from various locations that were near populated locations. Graphs were made for each parameter where arsenic was measured in micrograms, pH was measured in units, total dissolved solids was measured in parts per million, oxidation reduction potential was measured in millivolts and turbidity was measured with units.

Results

The average arsenic concentration in Bangladesh water sources was 22.4 micrograms while the average arsenic concentration in American water sources was 0.23 micrograms. The average total dissolved solids (TDS) and oxidation potential reduction (ORP) in America was greater than it was in Bangladesh. Turbidity was greater in Bangladesh by a range average of twelve.

Conclusions/Discussion

The arsenic levels in Bangladesh are much greater than the levels in America due to the massive arsenic groundwater outbreak but the water in America has greater ORP and TDS. This is possibly because of the constant treatment water in America is surrounded by and easier access to substances near sources. Turbidity is greater in Bangladesh mostly because the water sources are used constantly for irrigation, bathing and cleaning.

Summary Statement

This project's purpose was to compare arsenic and water quality from Bangladesh and America.

Help Received

The assistance received during this experiment included Mrs. Gillum, Dr. Fakir Yunus and Ershad Bin Ahmed. Mrs. Gillum and Dr. Yunus helped with formatting and Mr. Ahmed helped with researching and on-field testing.