CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
38467

Project Title
Water Originated Corrosion

Abstract

Objectives/Goals
The objective of this project was to establish an answer as to why the water related event occurred in Flint, Michigan in April of 2014. This project also works to understand how a solution to these events can be found.

Methods/Materials
Measured the corrosion of black iron pipe under the effect of water of three different chemistries. The amount of corrosion was determined through the concentration of iron in each water sample. An inductively coupled atomic plasma spectrometer (ICP) was used to measure the concentration of iron in the water.

Results
The concentration of iron present in each sample at the end of the experiment was compared to one another. The results showed that the water with the greatest amount of dissolved solids, most notably calcium and magnesium, was the least aggressive and caused the least amount of corrosion. Conversely, the water containing no dissolved solids caused the most corrosion of the metal pipe.

Conclusions/Discussion
This project validates that there is a difference between water chemistries and that their properties will effect the rate of corrosion in metals. The results of this experiment can be used to aid research regarding this topic and how that research can be used to prevent events similar to Flint, Michigan.

Summary Statement
I tested the effects of three water samples, all of different chemistry, and their effects on the corrosion rate of black iron piping.

Help Received
I received help from Babcock Laboratories, specifically Mr. Kyle Andrew and Mr. Brad Meadows (my father), in order to set up the experiment and analyze my data.