CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J0814

Project Title
How Efficient Are Direct Electrical Stainless Steel Plates in Reducing the Amount of Impurities from Water?

Abstract

Objectives/Goals
My objective was to see if the application of direct electrical charged plates would reduce the amount of impurities from different samples of water. I believed that the process would be more efficient than water without it.

Methods/Materials
To experiment, attach a stainless steel plate to two opposite sides of two rectangular containers. Add wires on one container and attach to slots on a current meter. Add 1000 mL of water. Cover container. After 30 minutes, record necessary data. Apply electricity and measure initial current for test container. After 15 minutes, record necessary data. Covering the containers prevents dust from entering the water, which might decrease resistance. Electric flow is observed with a current meter and implies an accurately functioning process. The two electrodes pull impurities to the sides, leaving the middle of a container with fewer impurities.

Results
Overall, the results indicated that the direct electrical charge plates did improve the process of separating dirt from dirty water. After each trial, the original water samples' k ohm (KU) resistance were higher. Also, the original water samples# (mA) current was lower. In other words, the water gets cleaner after being tested with the direct electrical charged plates. In trials #1, #2, #3, #4, and # 5, the water resistance (after each test) for the test container increased after being tested with direct electrical charge plates. After the water samples were tested for the test container, the currents decreased, which meant that there was more ionization going on between the plates, then the water will have less impurity.

Conclusions/Discussion
My hypothesis for my project was that the reduction of impurities from water using direct electrical charged plates would produce cleaner water than without. The findings of the results from the water samples support my hypothesis. It is found to be 75% effective. The data I collected agreed to what I predicted. The average resistance improvement of the reference container is 0.3 KU and 5.4 KU for the test container. (The higher the resistance the less impurity it contains.) The average current improvement of reference container is 3.9 KU and 3.8 KU for test container. (The lower the current, more ionization is occurring, which means ions are getting ionized.)

Summary Statement
This project is about reducing impurity from water by applying direct electrical charge plates.

Help Received
My dad assisted me in my procedure; Sister helped with editing my data collection and research; Mom and science teacher provided supplies necessary for project.