

FLUORIDE REMOVAL PROJECT

Background Information

The United African Alliance Community Center (UAACC) currently draws their water from a well that has been drilled into the ground. The water is pumped to a large holding tank and then is gravity fed to a spigot located outside the main gate. The water, for the most part, is safe to consume because it comes from deep within the earth. However, there is an excess amount of fluoride in the water. In the United States we have to add fluoride to our water because a trace amount can actually improve the health of your teeth and gums by preventing cavities. If there is too much, as there is in Arusha, the fluoride can actually discolor peoples' teeth to a dark brown. This effect can be reversed over time by brushing your teeth with charcoal, but brushing your teeth with charcoal is not easy to do and it tastes terrible. There are also other long term health problems associated with exposure to too much fluoride. It has been requested by the members of the UAACC that a filtering system be designed so that fluoride can be removed so that the health of the community will improve.

Project Description

In order to design an effective filtering system a kit must be developed to test for fluoride. This kit must be easy to use and, if possible, be put together with local supplies. You may modify an existing commercially available kit. Once a kit has been designed, it will be necessary to design the filtering system to remove excessive amounts of fluoride. If desired, you may do this project along with the Hydraulic Pump Project.

Requirements/Constraints

The testing, maintenance and repair must be done by local members of the community with limited education and experience.

Resources:

<http://www.stormingmedia.us/22/2230/A223092.html>

<http://www.epa.gov/safewater/hfacts.html>

http://en.wikipedia.org/wiki/Water_fluoridation

<http://www.cdc.gov/fluoridation/index.htm>

Considerations

What levels of fluoride are considered safe? Are age and medical conditions factors in considering safe levels? What problems arise from excess fluoride in drinking water? How do those problems hurt individuals? How do those problems affect the community and relationships? Are there potential solutions other than relying on a filtering process?