Safe and Affordable Drinking Water for Rural Regions of Developing Nations: Process Design and Implementation

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Background: The World Water Crisis

More than 1 billion people lack access to safe drinking water

Currently, water in many rural, developing areas is not treated effectively to remove pathogens.

The following table outlines some of the bacterial diseases commonly contracted through contaminated waterways:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Symptoms</th>
<th>Common Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholera</td>
<td>Diarrhea, vomiting, dehydration</td>
<td>Contaminated water, poor sanitation</td>
</tr>
<tr>
<td>Typhoid</td>
<td>Fever, diarrhea, abdominal pain</td>
<td>Contaminated food and water</td>
</tr>
<tr>
<td>Hepatitis</td>
<td>Jaundice, nausea, vomiting</td>
<td>Contaminated water, poor sanitation</td>
</tr>
<tr>
<td>Schistosomiasis</td>
<td>Skin nodules, bladder symptoms</td>
<td>Contaminated water, contact with infected snails</td>
</tr>
</tbody>
</table>

Water Treatment Process Design

Rwanda Field Research

During the summer of 2013 I lived with a host family in rural Rwanda, where I began to understand the difficulties involved in a rural water supply system. We discussed the problems of transportation, illness, childhood dehydration and more. So, together we worked to gather information on all of the troubling aspects of the rural community’s water supply, as well as information on desirable traits for a water treatment system. This information forms the body of our research and has been used to produce water treatment systems tailored to rural communities, so that we may return to Rwanda and implement our designs, in conjunction with local organizations.

Objective of Research

- Create water treatment systems tailored to rural communities in developing counties.
- Present the designs in a way that potential partners, such as NGOs, may use them as blueprints for implementation.

Our Plan of Action

- We plan to travel to Rwanda and use local contacts to work on-site with rural communities, to provide safe water.
- We are currently in negotiation with several NGOs to secure funding for our projects.

Acknowledgements

We would like to gratefully acknowledge the financial support provided by the following:

Viterbi School of Engineering
Viterbi Merit Research Award
Marshall School of Business
Scholarship for Field Research in Rwanda

For all references, see SWAN site: http://cee.usc.edu/assets/024/85077.pdf