**Best Practices for the Disinfection of Rural Community Water Supplies in Ecuador**

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My research this summer has been under Dr. Chad Tatko and in collaboration with other professors and students from the engineering and psychology departments. One focus of the Clean Water Institute and this research project specifically was on the development a sustainable method of water disinfection for small, rural water systems in Ecuador. The Ecuadorian government has made it a goal to have clean and accessible water for the whole country, however the responsibility of creating infrastructure in rural communities has been left to the residents themselves. The problem most commonly seen in these systems is insufficient levels of disinfectant residual at the taps throughout community. One potential solution to this problem is to establish and implement a community specific comprehensive risk assessment and management plan, called a Water Safety Plan (WSP).

The research project this summer began with a trip to Ecuador to evaluate the water delivery and disinfection systems present in the communities we visited. In addition, water chemistry was analyzed with an array of field tests. Palatability of the water at different concentrations of disinfectant (chlorine) residuals was studied by conducting taste tests with the members of the communities. Once back at Calvin, additional tests were run on water samples for further chemical characterization, meteorological data for the area of study was gathered, various instruments were analyzed for margins of error, and literature regarding WSPs was reviewed.

We have found that in rural systems similar to the ones we studied, microbial hazards should be the focus of the WSPs for each community, with an emphasis on proper system management, monitoring, and record keeping.

This opportunity has provided me valuable research experience and a direction as I pursue a career in either environmental chemistry or further education in environmental engineering. In addition, I have been able to develop meaningful relationships with professors and fellow research students, and was given the chance to travel outside of the country for the first time.