

# Pure water for Haiti

## Solar powered purifiers, installed by local teacher produce four liters a minute

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Doug Hollinger, a physics and chemistry teacher at Pavilion High School, was among ten team members who spent the past week in Haiti on a relief mission organized by the Celebrate Family Church.

Hollinger's special field of expertise is small solar powered water purifiers of his own design. In an earthquake-devastated county where the need for pure drinking water is crucial, and where the electrical power grid, if it exists, has been damaged and shut down, it would be difficult to imagine a more needed apparatus.

For the past several summers, Hollinger has been taking groups of students to the Thailand-Burma border region where they have been assembling solar powered electrical power supply systems for hospitals and schools. While there, he and the students gained an appreciation that the need for pure water in such places is as great as the need for electricity.

Back at his lab in Pavilion, Hollinger and the students set about the task of designing a solar powered 12 volt water purifier using ultraviolet light treatment. The idea was taken from a Berkeley design which was non-solar powered. Experimenting with different flow rates and exposure levels, a reliable working prototype was devised which destroyed all harmful, disease-causing microorganisms.

The apparatus is relatively low-tech in complexity, gravity fed, using materials which are available at low cost -- therefore, ideal for undeveloped and poverty-stricken regions.

As built, the purifier requires an input of clear water, although would work with turbid water with the addition of a filtration unit. It is capable of processing four liters of water per minute over a four hour period, after which the batteries need a shut-down period for solar recharging.

Last summer, working models were installed in two schools in Thailand.

When the Haitian earthquake hit, Hollinger got two more models ready to go. The disassembled components -- solar panels, batteries, charge controllers, germicidal UV bulb, stainless steel and PVC tubing -- were taken on the airline flight. Total weight including tools was about 120 pounds and required "some negotiating" to clear luggage limits.

In Haiti, with the assistance of an interpreter, Hollinger taught Haitian community leaders the principles behind the purifiers and how to assemble them. With Hollinger's guidance, the Haitians assembled units on their own. They were then disassembled for transport with Hollinger confident in the Haitians' ability to return to their respective villages and get the systems up and working.

The units are now making pure water for the villagers and should be operable for some time. The germicidal bulbs have a 7,000 hour lifetime. The Haitians are able to contact Hollinger if they have any need for spare parts.

In coming summers Hollinger has plans to bring groups of students to Haiti, where they will assist with the installations of more purifiers. He makes the excursions under a non-profit corporate banner of his own creation, 'The Global Youth Service Team.'

### **A great legacy**

Hollinger noted that a close personal friend and founder of his partner organization in Thailand and Burma, Walt Ratterman, was working in Haiti when the earthquake struck.

"Part of the reason I went to Haiti was because I felt Walt's work needed to go on," Hollinger said. "He was there building solar powered electrical systems on hospitals."

While in Haiti, Hollinger still had hope for a miracle, that his friend might have survived. Sadly, he received word on Tuesday that his friend's remains were discovered in the rubble of a hotel.

Ratterman left a great legacy, having built solar powered electricity systems for remote hospitals in 30 different countries.

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