SAFE WATER

A MESSAGE OF HOPE, HEALTH
AND HUMANITY

A KEY TO WIDESPREAD HEALTH

Rich Grant, PE | Fleis & VandenBrink | June 22, 2016
Safe Water International Ministries
"We shall not finally defeat AIDS, tuberculosis, malaria, or any of the other infectious diseases that plague the developing world until we have also won the battle for safe drinking-water, sanitation and basic health care."

Kofi Annan, Former United Nations Secretary-General
Introduction

- Every year, over 1.8 million people die of diarrheal diseases (including cholera). Of all the deaths attributable to diarrheal diseases in developing countries, 90% are of children under 5 years old, vs. only 9% in developed countries.
Proposed Agenda Today

- Global needs re Safe Water
- ”W.H.O. says” … disinfection is essential
- Equipment Solutions + Chemistry
- Two Winged Approach: Humanitarian & Mission
- TEAMing, our Essential Future. How can we team w SWIM?
- Questions and Discussion
The Problem

Quick Background

- Safe Water – still #1 health problem worldwide
- India water contaminants and hygiene linked to malnutrition via diarrheal disease
- It’s About Reaching People … LOTS
- Business as the Engine to Mission
Big Problem: Waterborne Disease

- Chlorine Is Essential, Yet
  - Not readily available
  - Not a “habit”

- Need to:
  - Make chlorine low cost
  - Make chlorine easy + anywhere
  - Inspire people to improve health
  - Be There … for relationships and to answer questions re the Living Water
Solution: Salt + Water + Energy

- **Salt + Water**
  - It’s everywhere
  - It’s cheap

- **Energy**
  - Just a little power ... 0.01 kwh for the Village’s supply today
  - Car/Motorcycle Battery – 12volt
  - Solar + battery ... anywhere, anytime

- **New Model … Proven Technology**
  - Injection Molded PVC + Titanium
  - Rapid Assembly
  - About $300 per Village, all-in

SWIM
Chlorine Production Unit (C.P.U.)
Equipment Solutions … Many!

Filters
- Biosand Filter – One per home, $100 ea
- Sawyer Filter – One per home, $25-180 ea
- Ultraviolet – One per home, $400 ea

Disinfection
- SWIM CPU – One per Community; $350
- SWIM A.D.D.s – One per home; $50 ea
- SWIM AutoCPU – community; $4,000
- Grunfos Electrochlor. – community $5,000
- Ultraviolet – Per community; $5-10,000
On Mission - Humanitarian

▪ SWIM Mission –
To love humankind as ambassadors of Jesus Christ, providing for their physical needs, focused on safe drinking water.

▪ Aligning with Your Mission –
“Experience has shown that microbial hazards continue to be the primary concern in both developing and developed countries.”

“The destruction of microbial pathogens is essential and very commonly involves the use of reactive chemical agents such as chlorine.”

Effective Impact

- With Chlorine - Diarrheal Disease Virtually Wiped Out
How It Works 😊

- “Just add salt”
- 12 volt power

Figure 1. The electrolytic generation of sodium hypochlorite using a brine solution.
II Kings 2:19-21  We didn’t invent this.

19 The men of the city said to Elisha, “Look, our lord, this town is well situated, as you can see, but the water is bad and the land unproductive.”

20 “Bring me a new bowl,” he said, “and put salt in it.” So they brought it to him.

21 Then he went out to the spring and threw the salt into it, saying, “By the Lord’s power, the Lord says: ‘I have healed this water. Never again will it cause death or make the land unproductive.’”
SWIM Is Blessed with Expertise in Science & Engineering

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The OSG Equipment from SWIM is an Attractive Option.

**Observations**

- Equipment costs are very low.
- Sodium hypochlorite (bleach) solutions are made rapidly.
- The equipment could potentially be made by the end-users creating independence and sustainability.
- There is no membrane to foul, pump to break, heat exchanger to clean...

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Free Chlorine vs. Passes Through SWIM Unit
(Two resistors in circuit; DPD Method)
Related to Convenience of the System
Time Needed to Treat 1,000 Gallons

- It takes about 15 minutes to pass 1 liter of a liter 58 g/L through the system seven times. When added to a 1,000-gallon tank the initial concentration of free chlorine would be about 1 ppm.

There is enough salt in the container in the photo to treat nearly 13,000 gallons of water to 1 ppm free chlorine.
Reproducibility of Chlorine Dose.

In field tests we found that we can treat water in Haiti to within about plus or minus 0.2 ppm.
Workers wait to spray disinfectant on medical staff after they treat Ebola patients at a clinic run by Doctors Without Borders, in Monrovia, Liberia.

On Mission.
SWIM Emergency Response

- Distribution of 2-week supply “Safe Water Drops”

On Mission.
SWIM Emergency Response

- 2014 Hurricane Hud-Hud, India
- 2015 Nepal earthquake

On Mission.
Sustainable Mission for Sustained Impact

• Healthy Products
• Create Local Jobs
• 95% of Funds Stay Local
• SWIM Repair/replacement of CPUs
Interim Action Plan
SWIM India – Humanitarian/Business Outreach
It’s Time for Team-Building!!

Shall we Team with SWIM?
Teaming is Essential

▪ CPU Build Event
Some Sources (Samaritan’s Purse):
10. WASH - Human Rights that are crucial to health and development
Vision Check!

- To reach the poorest of the poor with the love of humankind by using the technology available for disinfecting water and kill Ebola.
- To partner with other NGO’s, missions, clinics, and organizations and assist them with their water needs in developing countries.
- To make a difference in the quality of life of millions of needy people in rural areas that have no access to safe water.
- To assist in other related areas when possible, such as vision problems, health education, sanitation, building projects, wells, etc.
- To show the love of humankind and compassion by putting actions to our emotions.
- Where possible disciple others and help them with their spiritual needs after assisting them with their physical needs.
- To take every precaution possible to benefit the people and not harmfully influence the culture of the people we work with.
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