

Safe Drinking Water:  
Third World Nations Past and Present  
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Hello everyone, Charles Franklin here, currently studying at Penn State Brandywine, bringing you another WaterBytes podcast. In this podcast, I would like to talk about past and present efforts providing safe drinking water in third world nations, particularly countries in Africa because many nations in Africa face limited resources for clean drinkable water.

In some nations, water is obtained from polluted rivers where human waste has been dumped. In the United States, would you drink from your toilet?<sup>1</sup> No! So why should we stand by and allow the people of Africa or third world countries to do just that? What can we do? First let's explore past efforts and their results and see if our efforts have been effective.

In 1986, countries plagued by Guinea worm embraced the challenge of eradicating it.<sup>2</sup>

The Guinea worm is a parasite that enters the body from drinking unfiltered water. Copepods, a parasite itself, hosts the guinea worm larvae. When the copepod is ingested through drinking contaminated water and dies in the stomach of a human host, the guinea worm larvae is released. Over a year's period, the human host may not experience any symptoms from the female guinea worm migration through the human body until it reaches the skin.<sup>3</sup> Once the guinea worm reaches the skin, all hell breaks loose within the human carrier.

Fever... blistering skin... extreme pain... accompany the emergence of the female guinea worm. There is no vaccine...no cure. The human host simply has to deal with it. One way to get it out of the body is, as it emerges from the blister, wrap it around a stick and twist... little by little... until it is all the way out which can take months. Imagine that, in pain, blisters on your feet and legs, and you still have to carry on with everyday life or you will die. You have to bathe in streams, rivers, or swamps and what happens? The water you just bathed in now becomes infested and contaminated with the guinea worm larvae. The female worm emerging from your blister now releases her babies into the water supply that is used for drinking... and the cycle begins all over again for the next human being who drinks this unfiltered contaminated water. Not a pretty picture is it? So what was done to eradicate this parasite that does not have a vaccine or magic pill to alleviate the pain that comes with its emergence?

The Carter Center, the Centers for Disease Control and Prevention, UNICEF, the World Health Organization, and the countries effected by the guinea worm sought to eradicate it under the International Drinking Water Supply and Sanitation program. When the program began, there were approximately 3.5 million cases, crippling millions of people in 20 countries in Africa and Asia.<sup>4</sup> So what has happened since then?

In 1986, Under the leadership of the former president, Jimmy Carter and Dr. Donald Hopkins, the Carter Center has raised money and provided technical expertise in order to break the cycle of the Guinea worm. They have distributed portable filters and initiated education programs such as boiling water, drilling deeper wells, and ensuring infected humans don't contaminate the water supply. The portable filters trap the copepods that carry the guinea worm

larvae in order to prevent human consumption. By 2005, there were less than 11,000 cases reported in nine African

countries.<sup>5</sup> By 2012, there were less than 600 cases reported in four African countries.<sup>6</sup> The eradication of the guinea worm has been a very successful program. So how does this help with preventing diseases that still kills 1.5 million children each year?<sup>7</sup> How about a straw similar to the portable water filters used to eliminate the guinea worm?

VesterGaard invented the Life Straw which was named the Best Invention of 2005 by Time Magazine and Invention of the Century by Gizmag. The straw's powerful purification pipe removes 99.9 per cent of water-borne bacteria plus many other parasites, including E-coli, vibrio cholera, and salmonella that lead to diarrhea and other crippling diseases.<sup>8</sup>

Wow! This is a major invention that will surely save lives, not only in third world nations, but all nations. Currently, VesterGaard will provide clean drinking water for a year for every LifeStraw that is purchased. Is this enough? No way. The Life Straw cost about \$45 US dollars, some type of funding is necessary.<sup>9</sup> Hopefully, organization such as the Carter foundation will see the importance of the Life Straw and provide funding in order to insure every single person who doesn't have affordable access to clean water has a Life Straw. So now we have a solution to providing clean drinking water, right? Not so fast. The life straw is only a band aid to what needs to be done.

In developed nations, there are sanitation plants that provide clean water for drinking, bathing, and agricultural. Animals in the United States have cleaner water than many humans in

undeveloped nations. How can developed nations stand by and allow this to happen? Well, they're not. International communities are stepping up their effort and aid.

The Japan International Cooperation Agency (JICA) funded water projects that has provided clean water for over 43,000 people in Rwanda. Additional water projects by the Japan International Cooperation Agency in Rwanda will include constructing four water distribution systems expected to supply 33, 000

People with clean drinking water.<sup>10</sup> In addition, there are other efforts taking place providing clean drinking water. Many of these projects include drilling wells deep down to Africa's aquifers and pumping water up to the ground level, which is not a sustainable solution.

Africa's aquifers are said to be as old as 5,000 years, and with very little rain, these aquifers are not a renewable source of water.<sup>11</sup> But in the coming decades with more than 300 million people who do not have access to safe drinking water along with the demand for water to irrigate crops, some safe guards will need to be instituted to save Africa's aquifers for generations. What can we do?

Just like in The United States, policies should be instituted to preserve the aquifers. Scientist, farmers, and politicians need to form committees and collaborate on the best practices going forward. Scientist should provide the data that details past and present use of water, precipitation, and drought. Scientist will use the data to predict future trends and pass the information on to farmers and the politicians. The farmers and politicians should collaborate on the best policies to use. By doing so, the results will advance our understanding of Earth's water resources and with it, our predictive capability not only for the availability of water, but for the

future of life on our planet.<sup>12</sup> In the end, there should be two goals; one, to provide clean water to the citizens and, two, preserve where the water comes from.

Even though there are inventions that would allow us to drink contaminated water from toilets, swamps, puddles, and rivers, more is being done to assure everyone...everywhere... has a clean source of drinking water. We don't need gimmicks; we need a collaborated effort by every nation to assure we all have clean water in the coming decades. After all; what affects you... will affect me. This has been...Charles Franklin...reporting on safe drinking water. Thank you for listening.

## Citations

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