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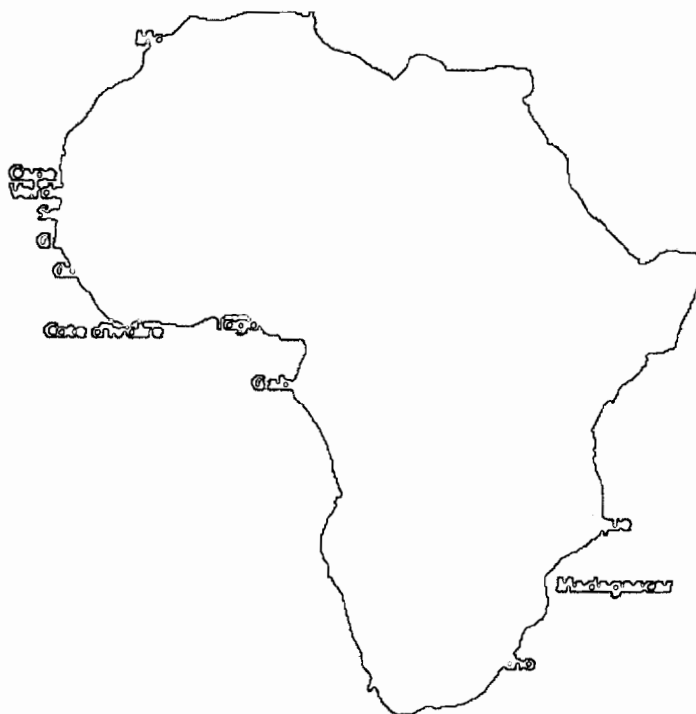
## ABSTRACT

The Water in Africa Project was realized over a 2-year period by a team of Peace Corps volunteers, World Wise Schools (WWS) classroom teachers, and WWS staff members. As part of an expanded, detailed design, resources were collected from over 90 volunteers serving in African countries, photos and stories were prepared, and standards-based learning units were created for K-12 students. Noting that although water is needed to sustain life, it can also serve as a conduit of illness and even death, this unit, "Water: Source of Health, Source of Illness," examines the connections between water and disease in four West African countries. The unit aims for students in grades 5-8 to become familiar with general concepts related to water-borne illness by viewing photographs and reading vignettes collected from in-service Peace Corps volunteers. It culminates with students working in groups to devise a strategy to fight one water-borne illness in rural Africa. The unit suggests a timeframe, curricular areas, materials needed, standards, discussion questions, objectives, a detailed procedure, assessment information, and follow-up/enrichment activities. Attached are maps, photos, and vignettes from Cameroon, Togo, Ghana, and Guinea. (BT)

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# *Water: Source of Health, Source of Illness*



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**Water in Africa is a project of Peace Corps World Wise Schools.**

*2000*

*Funded through a grant from the Department of Education, the Water in Africa project was realized over a two year period by a team of Peace Corps Volunteers, World Wise Schools' (WWS) classroom teachers, and WWS staff members. Inspired by an idea of one creative WWS teacher, the project eventually expanded into a detailed design. The development and implementation of the design included the collection of resources from over 90 Volunteers serving in African countries, the preparation of those photos and stories, and the creation of standards-based learning units for K-12 students.*

# Water: Source of Health, Source of Illness

## Description:

Although water is needed to sustain life, it can also serve as a conduit of illness and even death. In this unit, students examine the connections between water and disease in four West African countries. Students will become familiar with general concepts related to water-borne illness by viewing photographs and reading vignettes collected from in-service Peace Corps volunteers. The learning unit will culminate with students working in groups to devise a strategy to fight one water-borne illness in rural Africa.

**Timeframe:** Seven to ten 45-minute classes

**Curricular Areas:** Health, Language Arts, Visual Arts, Theater Arts,

**Grade Level:** Grades 5-8

## Materials

- World map
- Map of Africa
- The following images from the Water in Africa Web site:  
Cameroon--CM0212, CM0224, CM0225, CM00230, CM0233, CM0235, CM0714  
Togo--TG0117, TG0130, TG0115  
Ghana--GH0304, GH0308, GH0622  
Guinea--GN0105, GN0318
- Health and Nutrition Retrieval Chart
- Health and Nutrition Vignettes for Ghana, Cameroon, and Guinea,
- Water-Borne Illness Research Chart
- Research materials (Internet or traditional)
- Evaluation Rubric
- Internet Research on Water-Borne Illnesses

## Standards

Health Standard 2- Knows environmental and external factors that affect individual and community health

Benchmark-- Knows cultural beliefs, socioeconomic considerations, and other environmental factors within a community that influence the health of its members.

Benchmark-- Understands how various messages from the media, technology, and other sources impact health practices

Benchmark-- Knows local, state, federal, and international efforts to contain an environmental crisis and prevent a recurrence

Visual Arts Standard 1- Understands and applies media, techniques, and processes related to the visual arts.

Benchmark-- Understands what makes different art media, techniques, and processes effective (or ineffective) in communicating various ideas

Theatre Arts Standard 5- Understands how informal and formal theatre, film, television, and electronic media productions create and communicate meaning

Benchmark-- Applies research from print and non-print sources to script writing, acting, design, and directing choices

Language Arts Standard 2- Demonstrates competence in the stylistic and rhetorical aspects of writing

Benchmark-- Uses descriptive language that clarifies and enhances ideas

Language Arts Standard 4- Gathers and uses information for research purposes

Benchmark-- Organizes information and ideas from multiple sources in systematic ways

### **Essential Questions**

How does water affect peoples' health? How can complex ideas be conveyed without written words?

### **Objectives**

Students will:

- explore the connections between water and disease.
- describe the causes of and prevention strategies for a major water-borne illness.
- develop a multifaceted strategy to encourage prevention of water-borne illness in rural Africa.

### **Procedure**

#### **Procedure Day One**

1. Pose the essential question, "How does water affect health?" Lead a discussion that brings out the connection between water and health and between water and disease Ask students to make a list of ways in which water sustains life and then to list ways in which water can cause illness or death. Have students share their lists with a partner and then create a class list on the blackboard.
2. Tell students that they will be learning about the experiences of Peace Corps Volunteers

who are living in African countries that struggle to maintain an adequate supply of clean water. To familiarize them with terms and concepts they will encounter while reading selections written by volunteers, they will view photographs taken by volunteers serving in Togo, Cameroon, Ghana, and Guinea. Show the locations of these countries on a world map or map of Africa.

3. Show the following photographs and captions from the Water in Africa Web site: CM0212, CM0224, CM0225, CM0230, CM0233, CM0235, CM0714, TG1017, TG0130, TG0115, GH0304, GH0308, GH0622, GN0105, GN0318. As you review the photographs, explain unfamiliar terms (e.g. bore hole, forage, river blindness) and encourage students to think about how the photographs help to answer the essential question. Indicate that they will be finding information about the causes of, and prevention strategies for, water borne-diseases.
4. Tell students that for homework they should write a response to the essential question posed at the beginning of class. Their answers should reflect what they have learned from the class discussion and from viewing the Peace Corps photographs.

### **Procedure Day Two**

1. Have students share their homework with a partner. Tell students that they will be reading selections written by Peace Corps volunteers, some of whom they saw in the photographs, to learn more about the connection between water and disease.
2. Distribute copies of the Health and Nutrition Retrieval Chart and divide students into four "expert groups." Each group will be reading vignettes on Health and Nutrition from one of the following African countries: Ghana, Cameroon, and Guinea. They will then work with others in their expert group to fill out the retrieval chart.
3. Once each group has completed its chart, put students into groups of four students that include one student representing each of the expert groups. Tell students to take turns sharing the information they entered on their retrieval charts with the other members of the group until everyone has a complete chart. For example, student A talks about Togo while the others in the group take notes; student B then does the same thing for Cameroon, etc. This is apt to be a noisy, but productive process of students learning from their peers.
4. Tell students that for homework they should write a response to a second essential question, "What can people do to prevent water-borne illness?" Their answers should reflect what they have learned from completing the retrieval chart.

### **Procedure Day Three**

1. Ask students to share their homework responses with a partner. Then ask for methods that might be used to convey water sanitation strategies to a large number of people. List responses on the board.

2. Once the list is complete, review each suggestion and have students assess whether or not the method would work in rural West Africa where there is usually no electricity and where illiteracy, especially among women, is very high. Please note that television or print materials are unlikely to reach the broadest audience. On the other hand, battery-operated radios are common in African villages. Skits or visual aids, such as posters, storyboards, billboards, can also be effective methods of reaching a rural, and possibly illiterate, audience.
3. Instruct students to work in these groups to create a coordinated campaign to fight against one of the water-borne illnesses they have read about. They will need to do some additional research about the illness beyond what they have learned through the Peace Corps selections in order to plan an effective campaign. Pass out the Internet Research sheet to students and let them visit the sites on it to begin to locate information about water-borne illnesses. They should use Water-Borne Illness Research Chart to help them organize their research.
4. Toward the end of the period, ask students to stop and give you their attention while you describe the public awareness campaign that will be their assessment project. Their campaign should include a public service announcement for the radio, a skit to be performed in front of a village, and a series of either posters, storyboards or billboards. The campaigns will be presented to their classmates and will then be sent on to an international organization that works to fight water-borne illness. In order to present their campaigns to both of these audiences, students will need to have scripts for their public service announcements and skits. Visual aids that are too large to be sent in the mail should be photographed.

#### **Procedure Day Four**

1. Share sample public service announcements, skits, and visual aids with students. Discuss what made them interesting and educational.
2. Have students sit in their groups. Pass out copies of the Evaluation Rubric for the water-borne illness campaign. Go over the assignment, making sure everyone understands they are to work in a group. Review both the requirements and the rubric.
3. Instruct students to continue with their research and begin on their projects. Monitor the work on their health campaigns and act as a mentor, providing advice as they work in their groups.

#### **Day Five until completion**

1. Continue working with the groups to complete their public service campaigns.
2. Have students present the components of their campaign to an audience of peers, parents, teachers, and community members.

**Assessment**

Students will be assessed based on how well they meet the standards that are addressed in this unit. The rubric for the final project explicitly addresses each of these standards.

**Follow-up/Enrichment Activities**

Send student work the World Health Organization, the Carter Center, UNICEF or another organization working to fight against water-borne illness.

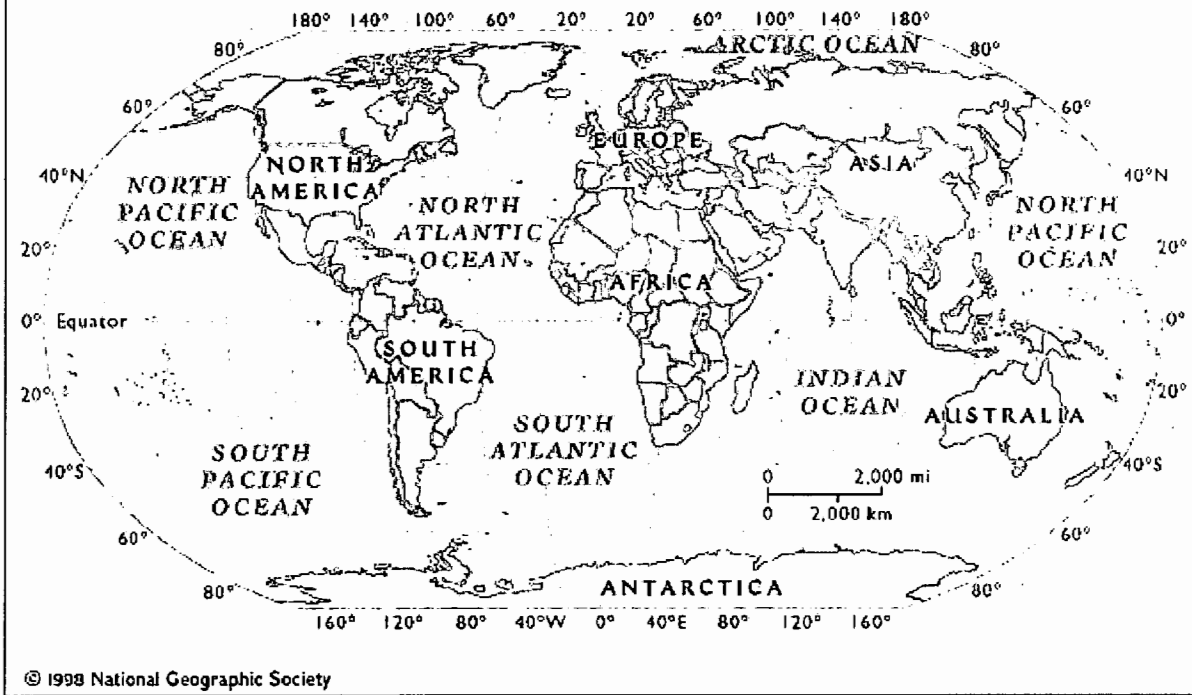
**Additional Resources:** None

**About the Author**

Amy Cohen is a teacher of World Geography in the Abington School District, located outside of Philadelphia, Pennsylvania.

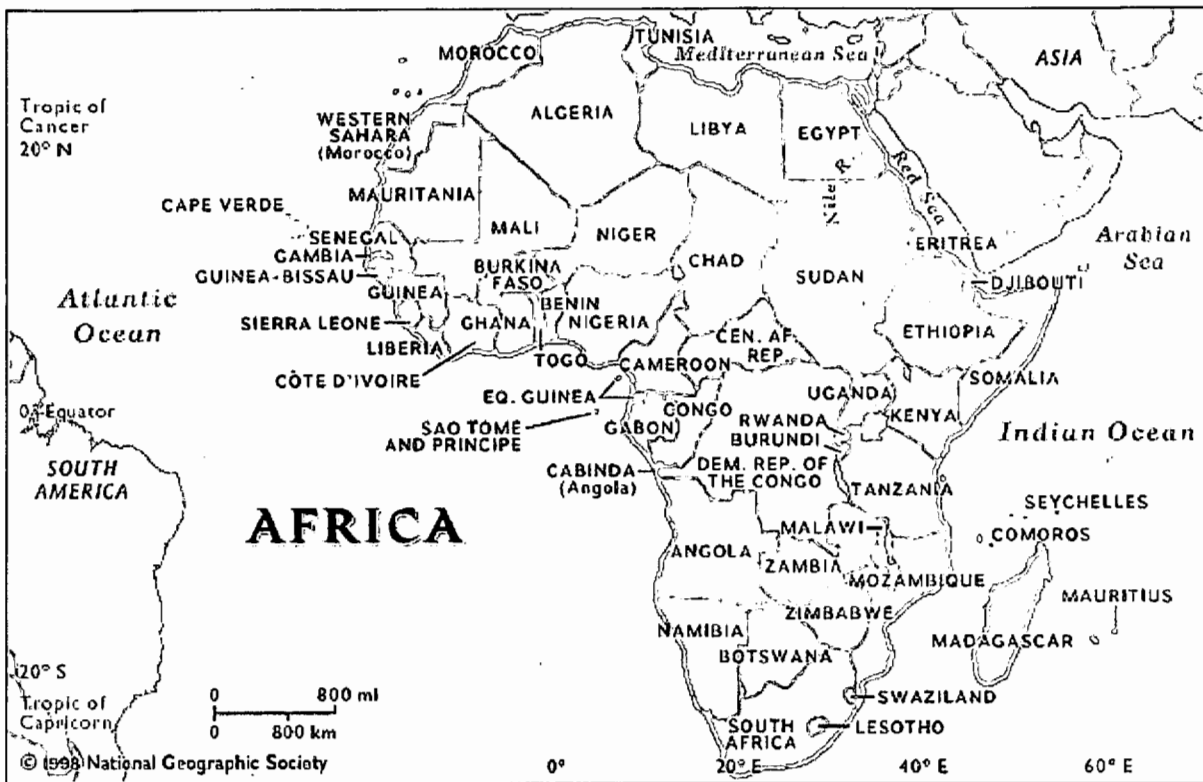


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## Images from Cameroon



CM0212

There are a number of wells in my area, some containing drinkable water and others containing water that is mostly used to do household cleaning. This well is in the compound of Veronique's mother. It was dug in the center of the compound and is covered by planks of wood and corrugated sheet metal when not in use.

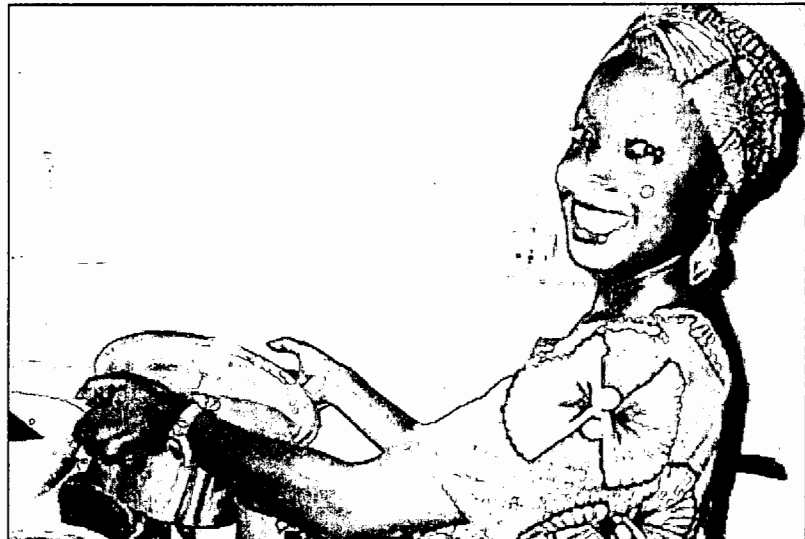
by Serena Williams

Kribi, South Province, Cameroon (1999)

CM0224

Volunteers boil their water to prevent water-borne diseases. You can see the brown contaminants that have settled to bottom of the pan I'm holding. This picture was taken in my kitchen in Kribi.

by Serena Williams  
Kribi, South Province,  
Cameroon (1999)



## Images from Cameroon



CM0225

After boiling my water, I filter it--mostly to get rid of the unappetizing (though no longer harmful) particles left after boiling.

by Serena Williams  
Kribi, South Province, Cameroon (1999)

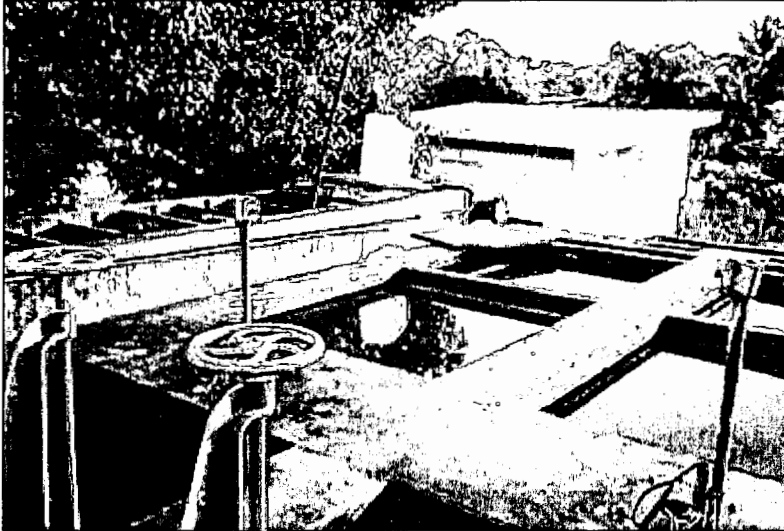
CM0230

This is the Kengue River behind the SNEC (Societe Nationale des Eaux du Cameroun ) water treatment plant in Kribi. It supplies water to Kribi and the surrounding areas.

by Serena Williams  
Kribi, South Province,  
Cameroon (1999)



## Images from Cameroon



CM0233

Water from the Kengue River goes through a series of purifying and filtering processes in these pools at the SNEC plant, separating the dirty water from the clean water. Sulfur, bleach, and lime are used to purify the water and increase its pH level.

by Serena Williams  
Kribi, South Province,  
Cameroon (1999)

CM0235

This is Augustine at the SNEC plant, tasting the water after it's been purified. He was kind enough to give me a tour and patiently explain the processes of water purification and distribution.

by Serena Williams  
Kribi, South Province,  
Cameroon (1999)



## Images from Cameroon



CM0714

There are seven water forages in Garey, a village of approximately 5,000 residents. Forages are deep water sources that have been carved with cement. Children often bounce up and down on the pump to get water, just as this girl is doing.

by Madhuri Kasat  
Garey, Cameroon (1999)

## Images from Togo



TG0117

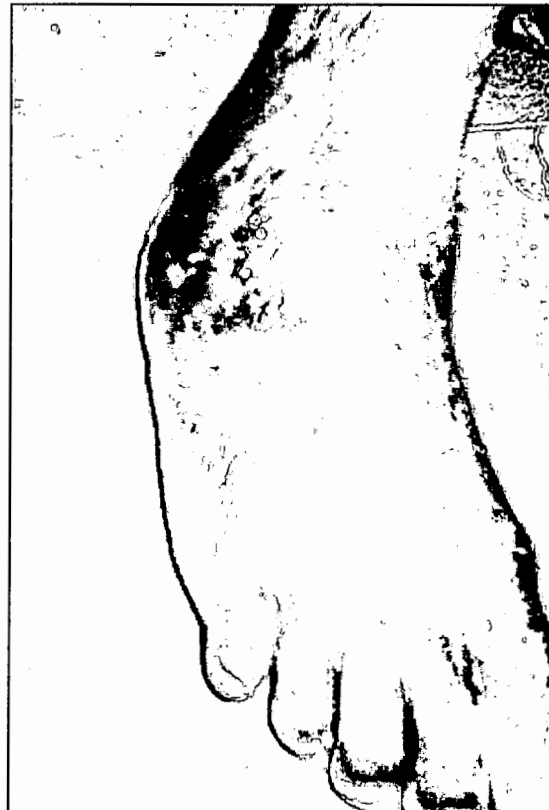
I'm attempting to carry a basin of water while the others look on—its hard work!

by Vilayphonh Khamphilanouvong  
Mangotideke, Togo (1999)

TG0130

A Guinea worm is beginning to come out of a sore it has created on a woman's foot. The woman was using traditional medicine to treat the ulcer. Guinea worm disease was a big problem in this region, but with education and water pump projects, the disease has almost been eradicated.

by Vilayphonh Khamphilanouvong  
Sarakope, Togo (1999)



## Images from Togo



TH0115  
Mawuli is pumping the water  
with his foot while Jeanette  
and I look on. This village  
water pump has been recently  
repaired.

by Vilayphonh  
Khamphilanouvong  
Mangotideke, Togo (1999)



## Images from Ghana



GH0304

Kojo (whose name means Monday born) is crossing a small stream to a nearby village. This stream is the traditional source of water (drinking and bathing) for the village. Bore holes are now in the village for safe drinking water and to prevent diseases caused by drinking river water.

by Nell Todd  
Mafi-Dove, Ghana (1999)

GH0308

Samuel is pumping water from one of the eight bore holes in the village. The bore holes are a social gathering point for women and children. The pump was specially made in Ghana to allow local people to easily maintain and repair it.

by Nell Todd  
Mafi-Dove, Ghana (1999)



## Images from Ghana



GH0622

Bathing in the lake is a popular activity for those who cannot afford a bathing stall. Schistosomiasis is a big problem in this area and Lake Volta is one of many sources of the disease.

by Steve Tester  
Kpong, Eastern Region, Ghana  
(1999)

## Images from Guinea



GN0105

These are the six different water containers used in my daily life: the green bucket holds drinking water, the metal bucket is used for well water, the purple one is my wash basin, the teapot is for hand-washing, there is a two-bucket filter system, and the yellow jug is for "clean" pump water.

by Jesse Thyne  
Diountou, Guinea (1999)

GN0318

Orlando Crosby puts water on to boil. Tap water is not necessarily safe to drink so we boil and filter all our water.

by Shad Engkilterra  
Kankan, Guinea (1999)



Name \_\_\_\_\_

**Health and Nutrition Retrieval Chart**

	<b>Cameroon</b>	<b>Ghana</b>	<b>Guinea</b>	<b>Togo</b>
<b>Water-borne Diseases</b>				
<b>Causes of water-borne diseases</b>				
<b>Disease prevention strategies</b>				
<b>Obstacles to carrying out disease prevention strategies</b>				

Water: Source of Health, Source of Illness  
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# Health and Nutrition Vignettes for Ghana

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**by Sasha Bennett, Bongo-Soe, Ghana**

The water quality has obviously improved by the installation of boreholes. But even though borehole water is taken deep from the ground, other factors do lead to eventual contamination. If the boreholes are situated far away from houses, the water is fresher than boreholes situated in the midst of houses. This is because of contaminated ground water from waste disposal: cooking, rubbish and just plain filth. Free range defecation, which is human waste, around or near the borehole area can seep into the ground water and causes contamination. There have also been cases in many district capitals of tiny worms present in borehole water. This is due to excessive dirtiness in or around the borehole.

Once people fetch water, they store it in covered clay pots to preserve the freshness and to prevent dirt and insects from contaminating the water. The clay pots are big, some are two and a half feet high and store a lot of water. Sometimes water in a clay pot is as cold as refrigerator water! I do not store water in a clay pot. I have one but have never been able to use it effectively--whenever I put water in it, it leaks out and brings lots of mosquitoes and flies.

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**by Molly Campbell, Amisano, Ghana**

Except for the river water, most water in Amisano is fairly fresh. Most people in the village use piped, well, or bore hole water for drinking and cooking. The river water is used mainly for bathing and washing clothes. By using the available fresh water, many sicknesses can be eliminated or at least subsided some. I remember when our nursery well was completed and water could be drawn. I asked someone if it was good water, and they said with a smile "It is very very sweet." It struck me funny because I never thought of water as being sweet.

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**by Nell Todd, Mafi-Dove, Ghana**

The bore holes in the town provide safe drinking water. However, many people (esp. older people) don't like the taste of the bore hole water. They grew up drinking river water-"its sweet for them"-and it's when their forefathers drank. It takes time to develop new habits and the bore holes have been in the village for only two years. However, those that still drink river water sometimes boil it-this kills all living germs in it. Drinking water is stored in clay pots inside people's rooms. They keep it covered, and the clay keeps the water cool.

The most common cause of contamination to the river water is human waste. Because there is a lack of latrines in the village many people defecate by the river. Rain carries feces into the water and diseases are spread.

Bilharzia is one of the most common diseases found in this part of Ghana. Worms breed in

snails, which live in the weeds and then enter a person. A person who urinates in the water will pass eggs back into the river, creating a cycle. One of the primary symptoms is urinating blood.

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**by Amy Wiedemann, Gbefi, Volta Region, Ghana**

There are two bore holes in my community that provide clean water, ready for consumption. This promise of clean water leading to good health is still not a strong enough argument to convince everyone in the community to use the bore holes. All previous generations drank from the river. Some of those ancestors lived to be one hundred years old while others died young from causes that had nothing to do with water. It's a tough argument. However, now the residents of Gbefi have a choice as to where they will fetch their water. As community and government health initiatives increase, the choice will become easier. Clean, clear bore hole water from one hundred meters below, or the River Dayi with run-off from the farm, soap suds from the laundry, and plenty of dirt.

The biggest obstacle to increasing clean water accessibility is the cost. This modern, state of the art hydro-technology greatly exceeds the budget of subsistence farmers. Yet I think accessibility is the key. If fetching from a bore hole is easier and more convenient than fetching from the river, everyone will do it without a second thought. Compare it to recycling in the United States. Recycling is beneficial to the environment; no one can argue that. However, fifteen year ago, it was a chore to recycle. You had to store it all in your house until you had time to deliver it to recycling centers. Aluminum went one place, glass to another, paper to a third etc., so the process would take up at least a half of your day. But then came curbside pickup just like the garbage and color coded recycling bins outside of grocery stores. Suddenly, someone who never considered recycling fifteen years ago, is now doing it faithfully. It became easy and convenient to recycle. I believe the same would be true for clean drinking water in Ghana.

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**by Steve Tester, Odumase Krobo, Ghana**

I am a very lucky Peace Corps Volunteer. I live near KPONG Water Treatment Facility so all my water comes from there. This is due to the fact that I live near the school. Even though my water's fluoride levels fluctuate I have never fallen ill due to contaminated water at my site.

PCV Vikki Sturdivant was not as lucky as I was with respect to water. Her water source was initially from Lake Volta. The water was contaminated and unpalatable if not polluted. She has had tests on the water and found it contained Shigella, bacteria (of all sorts), and schistosomiasis.

Obviously the impact on Ghanaians health is severe. If a worker in the family becomes ill, then it affects the entire family. In some areas water is treated or filtered but hopefully in the near future they will have bore holes to provide water.

I definitely prefer my insipid water to rancid disease carrying water.

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**by Chris Botzman, Akome, Volta Region, Ghana**

The bore hole water is clean. Some people will still walk past a bore hole and go to the stream even for drinking water. I have not heard a reason for going to the stream other than it is what they have always done.

A cover is put over the water barrels when they will not be used. Some of the water barrels are old metal drums. Thus there are particles from the barrel that get into the water.

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**by Michael Nelson, Gbani, Northern Region, Ghana**

People here have few traditional means to ensure they have clean water. The primary ways are keeping the stream clean and making certain animals and people do not defecate around there. None of these are foolproof solutions, however, as one can never be certain what is happening upstream. Luckily, though, we are free of guinea worm and schistosomiasis, health problems that have ravaged other Ghanaian communities.

# Health and Nutrition Vignettes for Cameroon

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**by Serena Williams, Kribi, Cameroon**

My drinking water is treated at the local water processing plant. However, this does not prevent frequent brown particles (soil) from entering into the system. Our water travels through pipes that are submerged in the earth. There are some points along the piping system with identified weaknesses. For example, they may be broken down in the past, which leads to increased difficulty when there are heavy rains. Yet, the SNEC (Societe Nationale des Eaux Du Cameroun) filtering process has proven sufficient for most (if not all) of my neighbors, and no additional measures are taken to purify the water. I remember the first time I saw the brown particles in my water. I was so afraid that it was completely unusable--especially after I boiled it and the brown settled to the bottom of the pot like algae. When I asked one of my neighbors about the origin and nature of the stuff, she laughed at me, saying it was "just dirt." Indeed it was just dirt, which I have since learned to live with.

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**by Karen McClish, Belita II, East Province, Cameroon**

No, my drinking water is not "fresh." The children are constantly sick with different water born illnesses. My neighbors know that they should boil their water to kill these critters and prevent their families from getting sick, but that takes time and energy (find the wood, start the fire, boil the water...). Not to mention that they would need to boil water for ten to fifteen people, the average family size here! So they don't do anything and they continue to get ill.

The water pump at the health center has been chlorinated and is safe to drink, but it is far from town where everyone lives, and we have to pay to take water from there. However, the price to take water for a month is less than one day of medicines to treat amoebas.

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**by Maryanne Pribila, Bogo, Extreme North Province, Cameroon**

Bogo is a large community and, as such, has a variety of water sources. During the rainy season, one side of the town turns into a lake. Herdsmen bring their cattle there to drink, and people bathe, wash their clothes, and drink from it. It is said to have a good taste, but I wouldn't want to try it myself.

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**by Madhuri Kasat, Garey, Extreme North Province, Cameroon**

Forages and wells are generally treated with bleach once a year. Forages are covered and thus the water is not usually contaminated as it rushes out of the pump. While forage water is potable, well water is not. Wells in Garey are not covered unless in a private concession. But people



prefer the taste of well water over forage water, as well water is "softer" (has less mineral deposits).

Annual water-treatments do not prevent outbreaks of typhoid and cholera. While the education to boil all water (regardless of its source) before drinking has been embraced by some community members, most people drink water directly from the forage as well.

River water is fresh only up to the instant it lands into already-contaminated pools or, if falling to a completely dry riverbed, to the moment people flock to bathe or wash dishes and clothes. People urinate or defecate in the river waters. This is the prime route for disease to pass into the water and others to ingest it via drinking or via flukes that penetrate a bather's skin and cause schistosomiasis.

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**by Lea Loizos, Bati, West Providence, Cameroon**

Although I often hear people in the village distinguishing between drinking water and regular water, their idea of clean water is based on that which looks clean, a practice that is not always reliable. And even though they may go out of their way to get to a "cleaner" source, the way they retrieve the water and their methods of storage can end up contaminating the water. For example, I've noticed that most people have a certain cup or gourd they use specifically to retrieve drinking water from its designated pot in the house. The problem is that people will often drink directly from the cup and then put it back in the water, which can easily spread germs.

During the rainy season, people may drink the rainwater they collect off their roofs. Although it may be clean, it can easily be contaminated by flies or by dirty storage container. As a result, people in the village are often ill with chronic parasite problems and sometimes even more serious illnesses such as hepatitis and typhoid. A large problem is that they are unaware of how diseases are passed through water.

Personally, I boil my water for a few minutes to kill any parasites/microbes that may be found within. And although I try and convince my neighbors and friends in the village to do the same, it is hard to get them to understand the importance-especially because boiling their water would mean using more firewood-something which is already becoming scarce.

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**by Brooke Levandowski, Buea, Southwest Providence, Cameroon**

In Buea, the water is purified and distributed by SNEC (Societe Nationale des Eaux du Cameroon). The water is collected in a catchment at the sources, called the German Spring and the Mosel Spring. From the springs, it is pumped into the water treatment facility. First, chlorine is added and the water flows into a holding tank. It is oxidized and then undergoes sand filtration. The water is then transferred into a holding tank until pumped to the various quarters of Buea. The facility purifies 6000 m<sup>3</sup> per day, treated with eight kilograms of chlorine per day. Other areas of Cameroon need to add more chemicals to purify the water, but since the water

from these springs is so fresh, only chlorine is necessary.

## Health and Nutrition Vignettes for Guinea

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by Jesse Thyne, Mamou, Guinea Conakry, Guinea

The water that I drink is not fresh, but it is clean. I get my water from a well outside my house. Well water, though cleaner and safer than open lake or river water, is subject to a great deal of the water diseases that plague Africa, like blood flukes, river blindness, amoebic diarrhea, schistosomiasis, etc. After I draw my water, I let the dirt sink to the bottom of the bucket. Next I filter the cleaner part of the water, then I bleach the filtered water. This system assures that my drinking water tastes faintly of bleach, is far from "fresh," and is completely free of disease.

Unfortunately for most of my community, their water is fresh, but not clean. Filters cost money, bleach costs money, boiling water costs fire wood, and without outside help, wells are difficult to dig. In some villages, or some parts of some villages, outsiders have installed water pumps that draw water from very deep in the earth where the water is cleanest. This water does not need as much treatment, but even a pump can give dirty water. For most people, however, water comes straight from the rivers, creeks, or even puddles nearest the village. These sources are created generally by rain, and have collected in their beds all the wastes and fecal matter from the animals and especially humans living in the area. Although drinking water from open water sources is clearly a serious health risk, most people have no options.

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by Jennifer Akers, Boke, Guinea

The drinking water (i.e. pump water) is not fresh despite the fact that it is treated with chemicals. Most Guineans in Boké recognize the need for clean drinking water and, therefore, drink only pump water and leave well and river water for cleaning and bathing. However, this is not always an option. In the situation where pump water is unavailable, many will drink water from less clean sources without treating it or filtering it first.

Although the water is contaminated in many ways that I am doubtless unaware of, there are a few that are evident to me everyday. First of all, while there are latrines throughout Boké, many people do not rely on them to go to the restroom. Thus, urine and feces contaminate all water sources here. Also, clothes and such are washed directly in the river, again contaminating the principal water source. This impacts on community health issues. Many Guineans suffer from stomach pains and diarrhea due to unclean drinking water. These problems range from minor to quite serious.

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by Shad Engkilterra, Banko, Guinea

The drinking water in Guinea is likely to be contaminated with any number of parasites--the most common among PCVs are giardia and amoebas. I have had a protozoa, and there have been cases of schistosomiasis. Conakry, the capital, has had two outbreaks of cholera in the last year.

These diseases are mostly gastro-intestinal and can cause diarrhea. This is the leading cause of death among children in the region. Stagnant water is the breeding ground for mosquitoes, which transmit malaria, another killer of many people. The black biting flies that transmit onchocerosis--a leading cause of blindness--live around rivers.

There are no programs in place to ensure clean drinking water in my village. Families drink pump water when it is available.

Name \_\_\_\_\_

### Water-Borne Illness Research Chart

**Directions:** Read the selections about Health and Nutrition from the Water in Africa Web site for the country that you have been assigned. Take notes on what you learn in the appropriate places on the retrieval chart below. You will need this information to complete your final project.

Country: \_\_\_\_\_

Source	Information About the Cause of Disease	Information About the Prevention of Disease

Name \_\_\_\_\_

Date \_\_\_\_\_

### Evaluation of Water-borne Illness Campaign

This evaluation rubric on the right will help you understand how your water-borne illness public service campaign will be evaluated. Use the rubric to help you make sure you include everything you need in your campaign.

### Project Requirements

You are expected to work cooperatively in a group. You must decide how to divide up the tasks, but every person in the group is responsible for handing in his/her own Health and Nutrition Retrieval Chart and Water-Borne Illness Chart. Your campaign will be evaluated on a group basis.

Your campaign must include:

- A 60-second public service announcement for the radio
- A skit to be performed in front of a village
- A series of either posters, storyboards or billboards

The scripts from both the public service announcement and the skit must be handed in.

You will present your campaign to your classmates and to an outside audience by acting out your skit, and expertly reading your public service announcement. Copies of your scripts and graphic work may be sent to an organization working to fight against water-borne illnesses, such as the World Health Organization, the Carter Center, or UNICEF.

Campaign Rubric		
Area	Points	Descriptors
Content Accuracy	/25	The students: <ul style="list-style-type: none"><li>• Demonstrated an understanding of the causes of and prevention strategies for the water-borne illness.</li></ul>
Content Depth	/25	The students: <ul style="list-style-type: none"><li>• Displayed sophisticated knowledge of ways in which cultural beliefs, socioeconomic considerations, and other environmental factors within a community influence the health of its members.</li></ul>
Process	/20	The students: <ul style="list-style-type: none"><li>• Completed research on causes and prevention of water-borne illnesses.</li><li>• Organized information and ideas from multiple sources in systematic ways.</li><li>• Applied research from a variety of sources to their skit, public service announcement, and visual aid.</li><li>• Worked with the group to refine ideas.</li></ul>
Presentation and Neatness	/10	The students: <ul style="list-style-type: none"><li>• Performed a polished skit that effectively communicates strategies for preventing water-borne illness.</li><li>• Played an audible recording of an effective public service announcement.</li><li>• Presented attractive visual aids with an easily understood message.</li></ul>
Creativity	/5	The students: <ul style="list-style-type: none"><li>• Produced a particularly sophisticated and compelling campaign to fight against water-borne illness.</li></ul>
Total	/100	

## Internet Research on Water-Borne Illnesses

The following Web sites will help you conduct research about water-borne illnesses.

Topic	Title and URL	Description
General Background Information	UNICEF's Water Handbook <a href="http://www.unicef.org/programme/wes/pubs/glines/water.htm">http://www.unicef.org/programme/wes/pubs/glines/water.htm</a>	This site contains information about major water-borne illnesses as well as background information about sources of water.
	World Health Organization <a href="http://www.who.int/health-topics/dindex.htm">http://www.who.int/health-topics/dindex.htm</a>	This site contains an index with references to each of the major water-borne illnesses.
River Blindness	The Carter Center <a href="http://www.cartercenter.org/riverblindness.htm">http://www.cartercenter.org/riverblindness.htm</a>	This site has clear explanations of the causes of and prevention strategies for river blindness. It also describes the Carter Center's Global 2000 River Blindness Program.
	Food and Agriculture Organization <a href="http://www.fao.org/news/1998/rblind-e.htm">http://www.fao.org/news/1998/rblind-e.htm</a>	A site sponsored by the Food and Agriculture Organization of the U.N. that describes the successful control of river blindness in African villages.
Guinea Worm Disease	UNICEF <a href="http://www.unfoundation.com/grants/1_2_guineaworm.cfm">http://www.unfoundation.com/grants/1_2_guineaworm.cfm</a>	UNICEF efforts to eradicate Guinea worm are summarized on this site.
	Association of State and Territorial Directors of Health Promotion and Public Health Education <a href="http://www.astdhphe.org/infect/guinea.html">http://www.astdhphe.org/infect/guinea.html</a>	This site contains a series of questions and answers about causes and prevention of Guinea worm.
Cholera	Centers for Disease Control <a href="http://www.cdc.gov/ncidod/dbmd/diseaseinfo/">http://www.cdc.gov/ncidod/dbmd/diseaseinfo/</a>	FAQs about the causes and prevention of cholera are included in this easy to use site.
	University of Wisconsin <a href="http://www.bact.wisc.edu/MicrotextBook/disease/cholera.html">http://www.bact.wisc.edu/MicrotextBook/disease/cholera.html</a>	Although the text of this summarized lecture is rather scientific, students might enjoy seeing what cholera looks like under a microscope.
Typhoid Fever	Centers for Disease Control <a href="http://www.cdc.gov/ncidod/dbmd/diseaseinfo/">http://www.cdc.gov/ncidod/dbmd/diseaseinfo/</a>	A straightforward site with FAQs about typhoid.
Schistosomiasis	Centers for Disease Control <a href="http://www.cdc.gov/ncidod/diseases/schis/schis.htm">www.cdc.gov/ncidod/diseases/schis/schis.htm</a>	This Centers for Disease Control site contains a fact sheet about schistosomiasis.



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