

## ! COVID-19: CDC Museum Closed to the Public

Due to ongoing concerns about the novel coronavirus (COVID-19), the David J. Sencer CDC Museum is closed to the public and will remain closed as we continue to assess and monitor developments. All CDC Museum tours are canceled until further notice.

This decision is being made out of an abundance of caution and based upon the guidance of the CDC regarding social distancing and the elimination of large gatherings.

Please continue to check our website and social media accounts for additional updates.



## Safe Water for All



Water is the essence of life and human dignity. Sufficient, safe, physically accessible, and affordable water is vital for all. Despite great strides over the last decades, 1.1 billion people living in rural areas and urban slums still rely on unsafe [drinking water](#) from rivers, lakes, and open wells. Children suffer greatly from water-related illnesses. Every year, nearly 2 million children die from the consequences of diarrhea and other diseases such as [cholera](#), [typhoid](#), and [dysentery](#).

CDC works with many global partners to develop and distribute simple and inexpensive disinfection and filtration systems that make an immediate difference in the lives of the worst affected. On another front: in collaboration with The Carter Center, CDC has worked to develop strategies to [eradicate Guinea worm disease](#) from sub-Saharan Africa. This water-borne [parasitic disease](#) is about to be conquered—a global public health achievement.



## The CDC Safe Water System

The [CDC Safe Water System](#) is a very simple solution to a very big problem. In response to a [1991 cholera epidemic in Peru](#), CDC scientists designed a way for families to treat unsafe water. A diluted hypochlorite (bleach) solution was used to treat water in specially designed vessels to protect the treated water from recontamination during transport, storage, and handling in the household. The solution and water vessels both had to be products that families would be willing to use, and education to improve hygiene and water handling practices was critical.

Promising pilot studies in Bolivia led to partnerships with Proctor & Gamble and Population Services International, a non-governmental organization. In 1996, the first national Safe Water System program-called CLARO was launched in Bolivia. CDC Safe Water System programs are now running in 24 countries around the world — from Afghanistan to Zambia. Partners range from international organizations such as UNICEF to local non-governmental agencies to Ministries of Water and Education to manufacturers, both local and multinational.



## Jerry Cans: Improving Water Transport & Storage

In many developing countries in Africa and South America, people re-purpose 20-liter (5-gallon) [jerry cans](#), initially used for cooking oil, to transport and store water. They are easy to carry on the head and are a good option for safe water storage. The opening is too small to allow hands or utensils into the water, so the water is poured out without contamination. The jerry cans can also be modified by drilling a hole in the plastic and adding a tap to provide water that has been treated for drinking or handwashing.

Based on the popularity of jerry cans, CDC worked with Proctor & Gamble to design what is known internationally as the “[CDC SWS Modified Jerry Can](#).” On display is the original cream-colored prototype, which includes indentations on the flat sides so that the container can be carried more comfortably on the head. The green and blue examples are from Bolivia and Guatemala.



## Safe Water Vessels

CDC works with SWAP, a non-governmental agency based in Kisumu, Kenya, to provide HIV support groups, opportunities to promote and sell water treatment and other health products, and to provide HIV services. Other initiatives integrate safe water programs with infant care and immunization programs as incentives for mothers to come in for care, and to begin adopting healthy behaviors.



## Haitian SWS Buckets

When Haiti was struck by a massive earthquake in 2010, [Safe Water System](#) programs and other point-



of-use treatments had been in use in Haiti for over 15 years. Five-gallon plastic buckets adapted with spigots, like the one on display here, were already the most-used Haitian water storage containers. These buckets and solutions are examples of products distributed immediately after the earthquake by CDC and other partners. Late in 2010, when Haiti experienced its first [cholera](#) epidemic, these products were widely distributed to affected populations.



## Sustaining Safe Water System (SWS) Programs

CDC's goal is to promote sustainable, long-term drinking water programs that will help prevent disease and improve health. Long-term programs require many partners (both governmental and non-governmental), community will, and long-term strategies for how to manufacture and distribute *SWS* products. Some of the most successful programs in countries such as Bolivia and Kenya contribute significantly to local economies by providing jobs to health educators, distributors, and manufacturers.

To encourage communities to treat household drinking water through the Safe Water System, health educators draw upon various behavior change techniques, including social marketing, community mobilization, health education, and promotion. Organized community-by-community, education campaigns show the link between contaminated water and disease, as well as the benefits of safe water and hygienic behaviors. Because fecal contamination from poor sanitation practices and unwashed hands and foods can spread disease, these campaigns also promote hand-washing and proper latrine use.

The *Safe Water System (SWS)* works best in communities where families have enough water for their daily needs. Each community faces different challenges. It is critical to understand the sources of water; how it is collected, transported, and stored; as well as local sanitation, cultural, and economic practices. Successful programs start with community will and buy-in, often coupled with technical and financial assistance from governments, non-governmental agencies, and industries.

For a Safe Water System (SWS) to have a health impact, households must obtain and correctly use the disinfectant on an ongoing basis. Although there is significant debate about pricing of health products for people in developing countries, it is generally accepted that users who pay something for a product—even a minimal amount—are more likely to value the product, use it correctly, and continue to use it.

Social marketing uses commercial marketing methods, such as branding and consumer research, to increase the acceptability of a product to meet a social need. Products are subsidized to some degree depending upon the capacity of a community or country and the amount of donor support available. Many SWS projects have used social marketing strategies, including advertising, community events such as parades and skits, and T-shirt giveaways.



## The Fiery Serpent: Guinea Worm Disease

People living in poor, remote rural areas without safe water have long suffered the burning pain of [Guinea worm disease](#) (dracunculiasis), caused by the “fiery serpent,” *Dracunculus medinensis*. There is no drug treatment or vaccine to prevent it. People become infected with Guinea worm when they drink water containing copepods (water fleas) that have eaten Guinea worm larvae. The worms [mature and grow inside the human body](#)—some as long as 3 feet. After a year, the female worm slowly emerges through painful blisters in the skin. People seeking relief from the burning sensation caused by the emerging Guinea worm immerse their affected limbs in drinking water sources. This stimulates the worm to release larvae into the water, and the contamination cycle begins again.

Using simple filters, treating contaminated water sources, and digging safe wells can prevent the disease. A [global partnership](#) of public, private, and governmental organizations has set the goal of making Guinea worm disease disappear from the planet.

In 1986, about 3.5 million persons in at least 21 countries in Asia, Africa, and the Middle East had the disease. Today, the number of cases is down to only a few per year in a few African countries.

## Enrichment Modules

### SEE

#### Take a closer look:

- Explore [Guinea worm disease](#) and the parasite that causes it, *Dracunculus medinensis*.
- View [Dracunculiasis medinensis under a microscope](#).
- Check out these infographics about the [Safe Water System](#) and CDC's [Global Water, Sanitation, and Hygiene \(WASH\) Program](#).
- Explore CDC initiatives, findings, FAQ, and resources about [waterborne disease in the U.S.](#)
- Learn everything you need to know about [cholera](#) (caused by *Vibrio cholerae*), [typhoid fever](#) (caused by *Salmonella enterica*), and [shigellosis](#) (caused by *Shigella*).
- Read more about [preventing waterborne germs at home](#).
- Explore CDC's [Safe Water for Community Health](#) (Safe WATCH) program.
- Learn how CDC [detects and investigates waterborne diseases](#) and [interprets waterborne disease outbreak data](#).

### HEAR

#### From the source:

- Find photographs, oral histories, and original documents from CDC's international campaign to eradicate Guinea worm disease through [Global Health Chronicles](#), a CDC Museum/Emory University collaboration.
- Hear from CDC EIS officer [Alice Wang](#) about her deployment to Flint, Michigan to assist with the Flint water crisis.
- Hear from [Anu Rajasingham](#), Public Health Engineer in CDC's Emergency Response and Recovery Branch, about her work addressing waterborne diseases.
- Explore the work of artist [Cândido Portinari](#) depicting the reality of poverty, living conditions, and disease burden in Rio de Janeiro in 1933.



## REFLECT

Then and now:

- Learn about [major milestones](#) in CDC's waterborne disease and outbreak surveillance initiatives.
- Read about CDC's Guinea worm disease (GWD) [global eradication campaign](#).
- Explore our ever-changing relationship with water in [this 2007 EID cover story](#), featuring artwork by Thomas Eakins, and [this 2018 EID cover story](#), featuring artwork by Patricia Goslee.
- Read about the [1991 cholera epidemic in Peru](#) [🔗](#). [This event](#) [📄](#) [🔗](#) was the catalyst for the start of CDC's Safe Water program.
- Note the change in [number of reported guinea worm](#) [🔗](#) cases over time.

## DO

**Give it a try:**

- Planning a trip? Find and use resources regarding [safe water when traveling](#).
- Learn more about the importance of clean water in infectious disease prevention with CDC Museum's hands-on [Public Health Academy STEM Lesson – Making Water Safe](#).
- Read CDC's recommendations for [making water safe during an emergency](#).
- Explore the [Carter Center's Guinea Worm Eradication Program](#) [🔗](#) page.

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