Providing Safe Drinking Water with Chlorine

By Jeffrey Sloan

Bringing chlorinated drinking water at the household level to communities around the world

This year marks the 100th anniversary of one of the most important public health achievements in American history—the chlorination of drinking water. As we celebrate this historic milestone, we must also recognize the ongoing challenge to bring safe drinking water to communities around the globe.

A Safer Century in the U.S.

On Sept. 26, 1908, Jersey City, N.J., began operating a chlorination plant at the Boonton reservoir, becoming the first U.S. city to use chlorine disinfection to help bring safe drinking water to the homes of its citizens. Cities across the U.S. rapidly adopted this life-saving technology, helping to virtually eliminate cholera and typhoid fever—diseases that once killed thousands of Americans each year. *LIFE* magazine has even called drinking water filtration plus the use of chlorine "probably the most significant public health advancement of the millennium."

Global Partnerships

The American Chemistry Council's (ACC) Chlorine Chemistry Division has long supported partnerships that help increase access to safe drinking water by providing chlorine disinfectants that kill germs and polyvinyl chloride (PVC) pipes that help protect treated water all the way to consumers' taps.

For the last five years, ACC and the World Chlorine Council have been partners in the West Africa Water Initiative (WAWI), an alliance of organizations working to improve water access in Ghana, Mali and Niger, including some of the most arid and impoverished communities in the world. As part of this partnership, the industry has contributed high-quality PVC pipes and other materials used to construct bore wells that will provide high-quality water to an estimated 500,000 people.

Building on this longstanding partnership, ACC has joined forces with the U.S. Agency for International Development (USAID) to help bring the benefits of water chlorination to communities in West Africa. These organizations announced a new two-year, $1.3 million partnership to implement household-based drinking water treatment programs in all three WAWI countries.

Using chlorine tablets and safe water storage techniques, these programs are designed to help reduce waterborne disease and improve the quality of life in communities facing some of the most severe poverty and health challenges in the world. Local partners in each country will assist in implementing the programs, with a goal of reaching three million people over two years.

Combating Waterborne Disease

More than one billion people today—1/6 of the world's population—rely on unsafe water from lakes, rivers or unprotected wells. The World Health Organization (WHO) estimates that every year, infectious diarrhea spread by contaminated water kills nearly two million people, mostly children under the age of five.

The United Nations has set a target to reduce by one-half the proportion of people without access to safe water by 2015. To meet this goal, nearly 200,000 people must gain access to safe water every day for the next seven years. Even if this ambitious goal is reached, hundreds of millions of people will still be waiting for this essential service.

While safe-water taps in every home remains the ultimate goal, interim solutions are immediately needed. Simple methods that allow individuals to disinfect and safely store water in their own homes have the potential to save a large number of lives each year. A recent WHO study found that household-based chlorination is the most cost-effective way to reduce waterborne illnesses.

Household Chlorination

Several different forms of chlorine can be used to disinfect drinking water in individual homes, such as:

- ***Chlorine tablets.*** The USAID-ACC partnership in West Africa will utilize effervescent tablets containing sodium dichloroisocyanurate. Manufactured and distributed by Medentech, the Aquatabs tablets treat 10 to 25 L of water.
- ***Hypochlorite solution.*** Another household chlorination option is a specially packaged solution of sodium hypochlorite. Typically containing 1.5% available chlorine, one capful of this solution treats 20 L of water.
- ***Combined chlorination/flocculation treatment.*** PUR Purifier of Water by Procter and Gamble contains both calcium hypochlorite for disinfection and ferrous sulfate for flocculation. This product is sold in a single-dose sachet to treat 10 L of water.

Keeping Water Safe

Household water programs must protect treated water from recontamination. Specially designed water containers with narrow mouths and spigots are used to help prevent hand contact with water. In addition, a residual level of chlorine helps prevent microbial regrowth in the container, just as it does in the pipes of a distribution system.

As we celebrate the 100th anniversary of drinking water chlorination in the U.S. this year, the ACC wants to help others around the world gain sustainable access to safe drinking water. Projects like WAWI ensure people everywhere have the same clean, healthy water that we enjoy in our homes here in the U.S. *wqp*

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