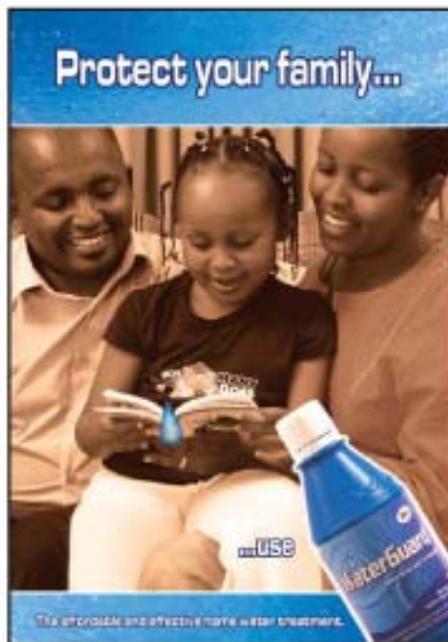




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# BEST PRACTICES IN SOCIAL MARKETING SAFE WATER SOLUTION FOR HOUSEHOLD WATER TREATMENT:

LESSONS LEARNED FROM POPULATION SERVICES  
INTERNATIONAL FIELD PROGRAMS -Executive Summary



March 2007

This publication was produced for review by the United States Agency for International Development. It was prepared by the Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZ) project.

## **POUZN Research Report No. 2**

**POUZN Research Report Series:** POUZN's research report series addresses important issues of childhood diarrhea prevention and management focusing on point-of-use water disinfection and zinc treatment. The papers are disseminated to a broad audience, including donor agency representatives, commercial and private sector partners, policy makers, technical advisors and researchers. POUZN staff and external experts review all papers.

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**Social Marketing Plus for Diarrheal Disease Control: Point-of-use Water Disinfection and Zinc Treatment (POUZN)** is a five-year task order, under USAID's Private Sector Program (PSP) indefinite quantity contract. POUZN works globally to introduce and scale-up **low-cost point-of-use (POU) water treatment products and zinc**, a new effective treatment for diarrhea for the reduction of child morbidity and mortality from diarrhea.

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## **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government

# ABSTRACT

Since 1998 Population Services International (PSI), with the funding and support of the U.S. Agency for International Development and other donors, has been involved in the implementation of safe water programs in 20 developing countries, promoting the Safe Water System (SWS), a household water treatment and safe storage strategy originally designed by the U.S. Centers for Disease Control and Prevention (CDC) in response to cholera outbreaks in Latin America. SWS includes three elements: (1) water treatment at point-of-use with a dilute sodium hypochlorite (chlorine) “safe water” solution; (2) storage of water in a safe container, and (3) education to improve hygiene and water use practices.

This paper synthesizes lessons learned, best practices, successes and challenges of social marketing safe water solution, and discusses how these lessons may be applied to planning safe water treatment programs around the globe.

Key words: household water treatment, household water quality, diarrhea prevention, safe drinking water, point-of-use water treatment

# ACRONYMS

<b>ARV</b>	Anti-retroviral (therapy) for HIV/AIDS
<b>BCC</b>	Behavior change communication
<b>CBD</b>	Community-based distribution
<b>CDC</b>	U.S. Centers for Disease Control and Prevention
<b>COGS</b>	Cost of goods sold
<b>GAP</b>	Global AIDS Program
<b>HIV/AIDS</b>	Human immunodeficiency virus/acquired immunodeficiency syndrome
<b>HWTS</b>	Household water treatment and safe storage
<b>KfW</b>	Kreditanstalt für Wiederaufbau (German government–owned development bank)
<b>KSH</b>	Kenya shilling
<b>MDG</b>	United Nations Millennium Development Goals
<b>MOH</b>	Ministry of Health
<b>MOW</b>	Ministry of Water
<b>NGO</b>	Nongovernmental organization
<b>NTU</b>	Nephelometric turbidity units
<b>OFDA</b>	Office of Foreign Disaster Assistance (USAID)
<b>PAHO</b>	Pan American Health Organization
<b>PEPFAR</b>	United States President’s Emergency Plan for AIDS Relief
<b>PLWHA</b>	Persons living with HIV/AIDS
<b>PMTCT</b>	Prevention of mother-to-child transmission
<b>POUZN</b>	Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment Project
<b>PSI</b>	Population Services International
<b>PUR®</b>	Procter & Gamble product for clarifying and disinfecting turbid water
<b>SWS</b>	Safe Water System
<b>UNICEF</b>	United Nations Children’s Fund
<b>USAID</b>	United States Agency for International Development
<b>WHO</b>	World Health Organization

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PSI field staff interviewed: Carmen Chan (India), Nils Gade (Tanzania and Zambia), Brad Lucas (Zambia and Tanzania), David McAfee (Madagascar), Guy Stallworthy (Myanmar), Chelsea Treadwell (Malawi), and David Walker (Kenya).

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# EXECUTIVE SUMMARY

The health consequences of inadequate water supply, sanitation, and hygiene are an estimated 4 billion cases of diarrhea, epidemics of waterborne infectious diseases such as cholera, and 1.8 million deaths each year, mostly among young children in developing countries, highlighting the need for effective public health strategies to prevent diarrhea.

As part of its global leadership mandate, USAID's Social Marketing Plus for Diarrheal Disease Control: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project, implemented by Abt Associates and Population Services International (PSI), led this effort to gather lessons learned from PSI's eight years of field experience implementing safe water programs in 20 countries.

In the 1990s, the U.S. Centers for Disease Control and Prevention (CDC), based on a series of field trials and published documentation, developed a household water treatment and safe storage strategy, the Safe Water System (SWS), that includes three elements: (1) water treatment at point-of-use (POU) with a dilute sodium hypochlorite (chlorine) solution; (2) storage of water in a safe container, and (3) education to improve hygiene and water use practices. This household water treatment program is rapid to implement, low-cost, and can be carried out on a national or regional scale. Household water treatment programs are also complementary to infrastructure development projects that improve the supply of water but cannot guarantee safe water quality at the household level.

Population Services International (PSI), one of the largest social marketing organizations in the world, was involved with the design and testing of the first SWS trials and has since implemented safe water programs in 20 developing countries. This paper synthesizes lessons learned, best practices, successes and challenges of safe water solution social marketing programs and discusses how these lessons may be applied to planning safe water treatment programs around the globe. Summarized below are the main lessons from PSI's experience social marketing the safe water system:

**Project Design:** Three factors are critical to initiating a safe water system project: (1) identifying appropriate target group(s) with high incidence of water-borne diseases, yet sufficient resources to regularly purchase the product; (2) establishing a stable funding base to ensure program sustainability; and (3) recruiting and assembling the human resource expertise needed to develop and support a safe water program.

- Lesson 1.1: The target group must meet the dual criteria of health needs and private sector viability
- Lesson 1.2: A long-term funding strategy should be developed
- Lesson 1.3: A range of technical expertise is needed

**Production of Safe Water Product Components:** Key factors to ensure a high quality product include locating, arranging for, and monitoring local production by companies with the required specialized technical knowledge; establishing stringent, ongoing quality control at program outset; setting appropriate expiration dates for the product; and correctly determining the chlorine dosage. Standardizing the product packaging into a 150 mL plastic bottle with a 3 mL cap, with the sodium hypochlorite concentration modified to meet the dosage needs in each country, has led to a more easily produced, transported, usable, and affordable product.

- Lesson 2.1: Arranging local production is not easy but is ultimately critical to sustainability and cost-effectiveness
- Lesson 2.2: Ongoing quality monitoring is essential
- Lesson 2.3: Product shelf life is important to market acceptance
- Lesson 2.4: Correct chlorine dosage is the key to product viability
- Lesson 2.5: Standardization of plastic containers simplifies program implementation and reduces program costs
- Lesson 2.6: Packaging must be appropriate for rural transportation and distribution

**The Regulatory Environment:** The approval of all relevant government ministries is an essential step in securing product registration, ensuring the product's long-term sustainability in-country, and maintaining collaboration with other government programs. Program staff must be prepared to respond to technical questions about the product in a timely and technically sound manner.

- Lesson 3.1: Involve all relevant government agencies early in the process
- Lesson 3.2: Respond immediately to government concerns
- Lesson 3.3: Prepare program staff to respond to technical questions about the product

**Marketing and Communications:** Marketing and communications efforts are critical for helping people understand the relationship between untreated water and diarrhea, the importance of treating household water, and the need for sustained, consistent product use. The associated behavior change challenge is significant, requiring time, a sustained investment, and a range of approaches. Identifying the appropriate target group(s) and channels of communication in peri-urban and rural areas are critical to this effort. Safe water program campaigns need to be aspirational in nature and complement other diarrheal disease prevention and treatment campaigns.

- Lesson 4.1: Shifting the focus of product launch to rural communities with unsafe water and sanitation has been very effective in enhancing product prestige

- Lesson 4.2: Communications must address specific safe water program behavioral constructs
- Lesson 4.3: The branded marketing campaign should be positive and aspirational
- Lesson 4.4: Safe water campaign messages need to be complementary to related campaigns
- Lesson 4.5: Timing of a safe water product launch affects success
- Lesson 4.6: Choosing the most appropriate communication channels is highly context-specific
- Lesson 4.7: Targeted technical information can address concerns about dangers of chlorine use
- Lesson 4.8: Behavior change for safe water use is a long process, requiring sustained funding
- Lesson 4.9: Marketing templates (such as labels) can be developed and adapted to local requirements

**Sales and Distribution:** The commercial sector in most developing countries provides an efficient vehicle for large-scale distribution of essential household items to the urban and peri-urban markets where women purchase most household goods. However, ensuring that the product reaches the retailer is not enough. A consistent “push” – through point-of-sale materials that call attention to the product -- is needed to keep the product in the forefront of retailer displays and consumer minds. Partner NGO volunteer or community-based distribution networks can assist with promotion and distribution and significantly improve rural penetration. Successful programs can encourage commercial firms to enter the market with their own brands.

- Lesson 5.1: While the commercial sector will distribute the safe water product, program success requires a complementary “push” from the project
- Lesson 5.2: Capitalizing on NGO networks can significantly improve rural penetration
- Lesson 5.3: Entry of a socially marketed safe water product can encourage commercial sector participation

**Creating Partnerships:** The cultivation of partnerships has not only strengthened political support for safe water programs but has also increased product sales among target populations.

- Lesson 6.1: Partnerships are vital to the successful adoption of the safe water program at all levels
- Lesson 6.2: Donor advocacy and support can make a considerable contribution to the success of safe water programs

- Lesson 6.3: With appropriate coordination and training, NGO programs can offer a wealth of opportunities for reaching rural and high-risk populations
- Lesson 6.4: Trusted spokespersons and product champions are fundamental to product adoption

**Product Costs, Pricing and Cost Recovery:** It is a careful balancing act to set an affordable consumer price that recovers production costs, minimizes subsidies, and yet provides key target populations access to the product.

- Lesson 7.1: Product cost may be recovered through sales
- Lesson 7.2: In most countries, product subsidies are not necessary

**Integrating Safe Water into HIV/AIDS Programming:** The provision of safe drinking water is critical in support for persons living with HIV/AIDS (PLWHA) since they are particularly susceptible to opportunistic infections and diarrhea. Partnering with non-governmental organizations that provide care to PLWHA has been a successful model for reaching this target group.

- Lesson 8.1: Partnering with local nongovernmental organizations that provide care for persons living with HIV/AIDS has been a successful model for reaching PLWHA
- Lesson 8.2: Interest in reaching PLWHA can provide the stimulus for a national safe water campaign

Household-level point-of-use water treatment has been shown to significantly reduce diarrheal diseases in vulnerable populations and should become an essential intervention within child survival, HIV/AIDS, and water supply programs. While challenges remain, such as ensuring consistent product use and program financial sustainability, the key elements in implementing household water treatment programs using safe water solution are now quite well understood. These and other evidence-based point-of-use water treatment programs should be scaled up and expanded throughout the developing world, filling a critical public health gap in drinking water quality.

# INTRODUCTION

In September 2000, the United Nations General Assembly adopted Millennium Development Goals (MDG) to promote “human development as the key to sustaining social and economic progress.” One MDG target is to “halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.” Even if that goal is met, over 600 million people will still lack access to safe water in 2015. Moreover, although the MDG target specifically calls for the provision of “safe” drinking water, the yardstick for assessing progress toward that target is provision of water from “improved” sources, such as boreholes or household connections. Because post-source contamination is so prevalent, it is difficult to assess whether water is actually safe at the household level even for people who currently obtain drinking water from improved sources.

The health consequences of inadequate water supply, sanitation, and hygiene are an estimated 4 billion cases of diarrhea, epidemics of waterborne infectious diseases such as cholera, and 1.8 million deaths each year, mostly among young children in developing countries, highlighting the need for effective public health strategies that can keep water safe and prevent diarrhea.

## HOUSEHOLD WATER TREATMENT AND POINT-OF-USE CHLORINATION

Since 1996, a large body of published work has examined the health impact of interventions to improve water quality at the point-of-use (POU) through household water treatment and safe storage (HWTS). The results of these studies, including several randomized controlled intervention trials, have highlighted the public health implications of post-source contamination of drinking water during collection, transport, and storage and the health value of effective HWTS. A recent meta-analysis found that hygiene education and water quality interventions were effective in reducing diarrheal disease by 42 and 39 percent, respectively.<sup>1</sup>

In 2003, as the evidence base for the health benefits of various HWTS methods accumulated, academic and government institutions, nongovernmental organizations (NGOs), and private sector organizations that support or engage directly in research and implementation of novel HWTS approaches formed the International Network to Promote Household Water Treatment and Safe Storage, with a secretariat hosted by the World Health Organization (WHO) in Geneva, Switzerland. Its stated goal is “to contribute to a significant reduction in waterborne disease, especially among vulnerable populations, by promoting household water treatment and safe storage as a key component of water, sanitation and hygiene programmes.”

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<sup>1</sup> Fewtrell L., Colford, J.M. Water, Sanitation, and Hygiene: Interventions and Diarrhoea, a Systematic Review and Meta-Analysis. Washington, DC: World Bank HNP Discussion Paper, July 2004.

The Network serves as a forum for professional collaboration and is an excellent resource for those interested in starting water treatment programs.<sup>2</sup>

The five common household water treatment options are chlorination, filtration (biosand and ceramic), solar disinfection, combined filtration/chlorination, and combined flocculation/chlorination.

Chlorination was first used for disinfection of public water supplies in the early 1900s, contributing to dramatic reductions in waterborne disease in cities in the developed world. Although small trials of point-of-use chlorination had been implemented, larger-scale trials began in the 1990s as part of PAHO and CDC's response to epidemic cholera in Latin America.

The Safe Water System (SWS) developed by the CDC includes three elements:

1. A water treatment *product* consisting of a dilute sodium hypochlorite (chlorine) solution, referred to throughout this document as the safe water solution or “the product;”
2. *Storage* of water in a safe container; and
3. *Education* to improve hygiene and water use practices.

In randomized controlled trials, use of the SWS has resulted in diarrheal disease risk reduction from 26 to 84 percent, with an approximate average reduction of 50 percent.<sup>3</sup>

## PSI AND THE SAFE WATER SYSTEM PROGRAM

With offices in more than 60 countries, PSI is one of the world's largest social marketing NGOs. PSI designs a brand name and logo for health products and services, sells them at affordable prices, distributes them through wholesale and retail commercial and public sector networks, and generates demand for the products through behavior change campaigns (BCC) that make use of radio and television spots, mobile video units, point-of-sale materials, theatrical performances, and interpersonal communication. PSI's primary areas of focus are HIV/AIDS, malaria, family planning, and maternal and child health.

In 1996 and 1997, PSI was involved in the design and testing of the first safe water project with the CDC. The CDC developed and tested a prototype SWS pilot in Bolivia, and PSI fielded the first commercial application. Controlled trials confirmed that use of the safe water system reduces the incidence of diarrhea under field conditions. In Bolivia, a five-month field test led to 44 percent fewer diarrhea episodes in intervention versus control households.<sup>4</sup> PSI, with continuing technical support from the CDC, has since applied the lessons learned from the

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<sup>2</sup> The Network can be accessed at [www.who.int/household\\_water/](http://www.who.int/household_water/)

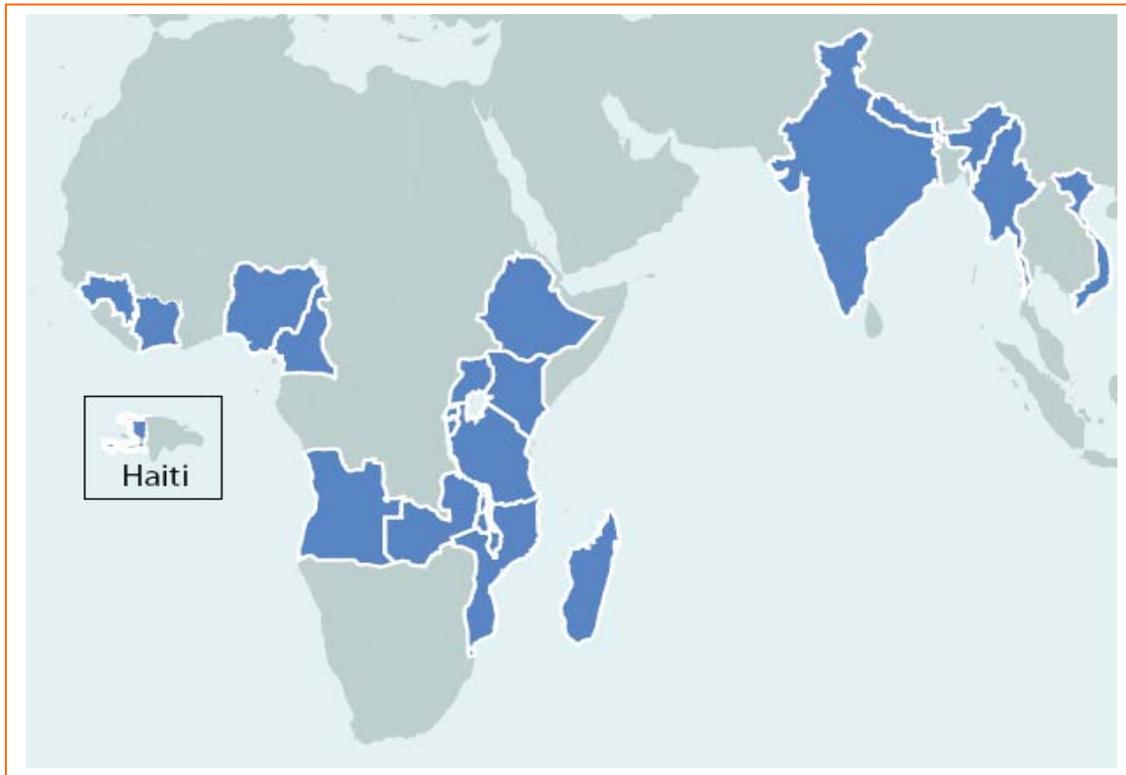
<sup>3</sup> Wright J., Gundry S., Conroy R. Household Drinking Water in Developing Countries: A Systematic Review of Microbiological Contamination between Source and Point-of-Use. *Tropical Medicine and International Health*, January 2004, 9(1):106-117.

<sup>4</sup> Quick R. et al. Diarrhea Prevention in Bolivia through Point-of-Use Disinfection and Safe Storage: A Promising New Strategy. Atlanta: U.S. Centers for Disease Control and Prevention, 1999.

Bolivia pilot program to expand the social marketing of the safe water system throughout the developing world.<sup>5</sup>

(Figure 1, below, presents a map of current PSI safe water program countries.)

**FIGURE 1: CURRENT PSI SAFE WATER PROGRAMS**



PSI launched its first two large-scale safe water programs in Zambia and Madagascar in the midst of public health emergencies—a cholera epidemic in Zambia and a cholera epidemic followed by three consecutive cyclone emergencies in Madagascar. Both efforts have successfully developed into ongoing programs promoting a dilute chlorine solution for everyday use. In Zambia, sales steadily increased from 732 bottles of safe water solution per month in October 1998 to 155,000 bottles per month in June 2006.

To date, PSI has launched safe water programs in 20 countries, as detailed in the following table.

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<sup>5</sup> Initial PSI programs included the marketing of both the safe water solution and an accompanying water storage container. Due to high production and transport costs associated with marketing storage containers, this practice was discontinued. Promotion of appropriate storage and targeted behavior change communication campaigns remain essential elements of the program.

**TABLE I: PSI SAFE WATER PROGRAM COUNTRIES IN ORDER OF LAUNCH DATE**

Country	Date Launched	Funding sources	2005 Sales (bottles)	Cumulative Sales (bottles)
Zambia	November 1998	PEPFAR, CDC, USAID	1,835,088	9,531,959
Madagascar	March 2000	CDC, USAID	705,554	3,164,557
Tanzania	July 2002	PSI	140,466	811,297
Rwanda	August 2002	PSI, Government of Rwanda, USAID	66,293	323,394
Malawi	December 2002	PSI, USAID,	666,298	2,222,302
Kenya	May 2003	PSI, USAID	832,106	2,088,670
Afghanistan	June 2003	USAID, CDC	367,501	535,580
Burkina Faso	February 2004	PSI	1,505	21,850
India	April 2004	USAID	95,498	211,987
Myanmar	July 2004	UNICEF, WHO, PSI	92,193	169,852
Uzbekistan	July 2004	PSI	9,890	16,320
Mozambique	November 2004	PSI, USAID, Government of the Netherlands	207,517	374,820
Nigeria	November 2004	PSI, USAID	495,554	959,793
Uganda	August 2005	CDC, PEPFAR, PSI	95,543	383,129
Nepal	October 2005	PSI	152,661	249,881
Vietnam	November 2005	PSI	26,712	93,772
Ethiopia	December 2005	USAID	N/A	429,163
Burundi	March 2006	USAID	N/A	34,244
Guinea	July 2006	KfW	N/A	N/A
Cameroon	November 2006	CDC	N/A	N/A

Source: Population Services International.

Seventeen of the programs are on-going. Two, Uzbekistan and Burkina Faso, have been discontinued due to lack of funding; Afghanistan has been transferred to another project.

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## METHODOLOGY

This paper is based on a review of secondary research and other technical reports produced by PSI and CDC and summarizes interviews with PSI and CDC staff. Appendix A includes the interview guide while Appendix C includes a full list of references and individuals interviewed.

Based on the information gathered, the paper presents lessons learned in the following categories:

- Project Design
- Product Development
- Policy/Regulatory Environment
- Marketing and Behavior Change Campaigns
- Sales and Distribution
- Partnerships and Linkages
- Product Costs, Pricing, and Cost Recovery
- HIV/AIDS and the Safe Water Programs

A final section presents a summary of recommendations and conclusions.