October 2005

Disinfecting Water, Saving Lives

Point-of-Use Safe Water Products Prevent Diarrhea and Improve Family Health

The young orphans of the Sunrise Children's Villages no longer suffer from debilitating bouts of diarrhea or spend their time hunting for firewood to boil water — they are now drinking clean water and focusing their energy on school. Rescued from streets and refugee camps, the orphans now have purified drinking water in their houses and carry it to school thanks to PSI/Uganda and PuR, Purifier of Water sachets. In collaboration with Procter & Gamble, PSI/Uganda is educating children and the staff of the Sunrise Children's Villages on the causes and dangers of diarrhea, the importance of treating water and general hygiene practices. As a result, incidence of diarrhea has decreased.

PSI is providing people around the world powerful tools to disinfect water in their own homes, protecting them from debilitating and frequently fatal bouts of diarrhea. PSI markets three products — the safe water solution (SWS), PuR, Purifier of Water and *Aquatabs* — and implements complementary communications campaigns to reduce incidence of diarrheal disease. Since 1985, PSI has also marketed oral rehydration salts to treat the dehydration caused by diarrhea and continues to do so in 10 countries.

Diarrhea kills 2.2 million people annually, mostly the poor, and is largely attributable to contaminated water. It is an underlying cause of childhood malnutrition and is the world's second leading killer of children under five — 5,000 children die every day from it. A great advantage of SWS and PuR is the immediacy of the health impact. Whereas improvements in infrastructure are typically costly and take years to implement, SWS and PuR can be provided inexpensively and rapidly with significant positive impact.

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The Safe Water Solution

The SWS was developed by the U.S. Centers for Disease Control and Prevention (CDC) and has been promoted and distributed by PSI since 1998. Today, PSI has SWS programs in 14 countries.[1] In most countries, start-up funding has been provided with PSI's own funds. Significant support has also been received from the CDC, the U.S. Agency for International Development, the Dutch Government, UNICEF, CARE and the World Health Organization (WHO). SWS is a bottle of dilute sodium hypochlorite solution (chlorine bleach) that disinfects water at point of use by inactivating microbial pathogens that cause diarrhea. CDC field trials from several countries show a 44-85% reduction in diarrhea episodes when SWS is used correctly.

Through PSI's extensive distribution networks, branding and advertising, low-income families can easily access the simple and effective water quality treatment. A bottle of PSI's SWS typically provides safe drinking water to a family of six for one U.S. cent or less per day. To date, PSI has provided over 14 million bottles of SWS, treating over 20 billion liters of water for families around the world.

PuR, Purifier of Water

In 2004, PSI expanded its safe water portfolio to include the social marketing of PuR in Uganda and Haiti, and will expand into Pakistan and elsewhere in 2005. PuR, developed by P&G, is a robust point-of-use technology that purifies water through a combined process of disinfection

[1] Burkina Faso, Burundi, India, Kenya, Madagascar, Malawi, Mozambique, Myanmar, Nepal, Rwanda, Tanzania, Uganda, Vietnam and Zambia.

PSI

PROFILE

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with calcium hypochlorite and flocculation with iron sulfate. PuR's four-gram powder sachets use the same technology utilized by municipal water treatment facilities. The efficacy of PuR as a point-of-use water treatment system has been proven through a series of CDC laboratory and clinical studies in Guatemala, Kenya, Pakistan and Bangladesh. An additional CDC study showed that use of PuR or SWS was associated with a reduction in all-cause mortality, making it the first study to prove that household water treatment can save lives.[2] To date, PSI has sold over one million sachets of PuR, treating over 10 million liters of water.

In 2004, these products prevented an estimated 8.7 million episodes of diarrhea and the deaths of 26,000 children.

Improving the Health of People Living with HIV/AIDS
SWS has an additional benefit for people living with HIV/AIDS. Chronic diarrhea can prove life-threatening for those with weakened immune systems. SWS has been shown to result in a 37% reduction in risk of diarrhea for people living with HIV/AIDS.[3] Considering the lack of antiretroviral treatment for the vast majority of those suffering from AIDS, avoiding opportunistic infections provides a chance for a longer and healthier life.


An Indian woman treats her water with *Safewat* safe water system.

A few highlights of PSI's point-of-use water programs include:

Haiti
PSI/Haiti launched PuR in November 2004, just in time to play a crucial role in the relief response to severe flooding and cholera outbreaks along the western coasts. Since then, PSI has formed collaborative relationships with local women's groups to sustain the distribution of PuR to areas most in need along with complementary interpersonal communications teaching correct use.

India
Since its launch in 2002, *Safewat* has provided over 95,000 person-years of safe drinking water in the slums of Delhi and Uttaranchal and in cyclone- and flood-prone districts in Orissa. Residents of slums learn about Safewat and diarrhea prevention at tasting stalls and women's meetings; rural villagers are reached by video vans that provide infotainment on diarrhea and the benefits of Safewat.

Kenya
In addition to traditional distribution methods, PSI/Kenya uses community-based sales agents who carry *WaterGuard* on foot or bicycle to small local markets and act as behavior change messengers.

Madagascar
PSI/Madagascar recruited small restaurants in urban neighborhoods to use water treated with *Sûr'Eau* for their clients' drinking water, to prepare food and to wash vegetables, dishes and hands. The same approach is being adopted within public primary schools to increase awareness among children. In collaboration with the National Emergency Council, Sûr'Eau is pre-positioned in high risk zones to prepare for the annual cyclone season.

Malawi
When SWS was launched in 2002 at the beginning of one of Malawi's cholera epidemics, then President Bakili Muluzi carried a bottle of WaterGuard in his coat pocket at public appearances and urged all Malawians to use it.

Tanzania
PSI/Tanzania is combining its SWS program with an innovative pilot program introducing Aquatabs chlorine tablets for longer shelf life (five years versus one year for the liquid) and easier transport, distribution and dosing.

Zambia
Launched in 1998, *Clorin* has helped to reduce diarrheal disease in a significant proportion of Zambia's estimated two million households. Annual sales of Clorin have steadily exceeded one million bottles for the past four years. PSI/Zambia's Clorin program thrives at the community level through training and communications activities with health center staff, neighborhood health volunteers and community members, specifically targeting peri-urban and rural areas.

Conclusion
When compared to the $80 billion a year needed for water infrastructure projects in developing countries, SWS and PuR are inexpensive alternatives which can immediately protect health. The UN World Water Development Report, issued in March 2003, states that, "disinfection of water at the point of use is consistently the most cost-effective intervention."

The combination of home water treatment, hand-washing and proper hygiene provides a substantial reduction in the number of diarrhea episodes, thereby improving children's health, nutrition, growth and development, and dramatically reducing the fatality rate. Finally, affordable safe water especially benefits families with limited access to quality health care services for the treatment of diarrhea and those who can least afford the productivity lost on caring for children suffering from bouts of diarrhea.

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[2] John A Crump, Peter O Otieno, Laurence Slutsker, Bruce H Keswick, Daniel H Rosen, R Michael Hoekstra, John M Vulule, Stephen P Luby. Household based treatment of drinking water with flocculant- disinfectant for prevention of diarrhoea in areas with turbid source water in rural western Kenya: cluster randomized controlled trial, British Medical Journal, doi:10.1136/bmj.38512.618681.E0 (published 26 July 2005)

[3] According to a CDC abstract presented at the 13th International Conference on AIDS and Sexually Transmitted Infections in Africa in Nairobi, Kenya in 2003.