



Supportive Environments for Healthy Communities

Issue 4 April 15, 2011 | Focus on Household Water Treatment and Safe Storage

This is the fourth update from the WASHplus Project. This issue includes abstracts and links to videos, journal articles, reports, etc. related to household water treatment and safe storage.

NEWSLETTERS

- **International Network on Household Water Treatment and Safe Storage Newsletter**, March 2011 – UNC The Water Institute ([Link to newsletter](#)) The March issue gives an update on the activities and publications of the Network and its members.
- **Unfiltered: Updates from PATH's Safe Water Project.** ([Link to newsletter](#)) The latest issue discusses a project that promotes water treatment among new mothers in Malawi.

VIDEOS

- **Thirst-Aid/Myanmar - Zawgyi Water, Sanitation and Hygiene Education Video, 2011.** ([Link to video](#)) Produced by Thirst-Aid Myanmar, this video features the popular mythical folk figure Zawgyi in a story that presents several key lessons about safe water and proper sanitation and hygiene practices. It also introduces the ceramic water filter for household water treatment and educates viewers on use and care of ceramic water filters.
- **Use of BioSand Filters in Cambodia, 2010.** Water and Sanitation Program ([Link to video](#)). The BioSand Filter (BSF) is a robust water treatment technology used in rural Cambodian households. It is capable of effective removal of indicator bacteria, specifically E. coli. BSF performance is comparable to other recommended household water treatment interventions.
- **Tulip Water Filter Mozambique, 2010.** Connect International ([Link to video](#)) Demonstration of the Tulip Water Filter in Mozambique by Laurinda, mobilizer of

the TAZAMO project of Connect International.

JOURNAL ARTICLES

- **Assessing the Impact of a School-based Safe Water Intervention on Household Adoption of Point-of-Use Water Treatment Practices in Southern India**, IN *Am J Trop Med Hyg.* 2011 Mar;84(3):370-8. Freeman MC, Clasen T. ([Link to abstract](#))

We assessed a pilot project by UNICEF and Hindustan Unilever Limited to improve the quality of drinking water for children in schools through adoption of improved drinking water practices among households in southern India. The intervention consisted of providing classrooms of 200 schools a commercial water purifier, and providing basic hygiene and water treatment information to students, parents, and teachers. We found no evidence that the intervention was effective in improving awareness or uptake of effective water treatment practices at home.

- **Bactericidal paper impregnated with silver nanoparticles for point-of-use water treatment**, IN *Environ Sci Technol.* 2011 Mar 1;45(5):1992-8. Dankovich TA, Gray DG. ([Link to abstract](#))

There is an urgent need for inexpensive point-of-use methods to purify drinking water. We describe a method to deactivate pathogenic bacteria by percolation through a paper sheet containing silver nanoparticles. The silver nanoparticles are deposited by the in situ reduction of silver nitrate on the cellulose fibers of an absorbent blotting paper sheet. These results show promise that percolation of bacterially contaminated water through paper embedded with silver nanoparticles could be an effective emergency water treatment.

- **Diarrhea prevention in people living with HIV: an evaluation of a point-of-use water quality intervention in Lagos, Nigeria**, IN *AIDS Care.* 2011 Mar;23(3):330-9. Barzilay EJ, et al. ([Link to abstract](#))

The impact of a point-of-use water chlorination and storage intervention on diarrheal-disease risk in a population of HIV-infected women in Lagos, Nigeria was evaluated. At baseline, 80% of women had access to improved water supplies and 95% had access to sanitation facilities. Following distribution of the intervention, water stored in participants' households was observed to have residual chlorine during 50-80% of home visits, a sign of adherence to recommended water-treatment practices. Diarrhea rates in project participants were 36% lower in the post-intervention period than during the baseline period. Point-of-use water treatment was associated with a reduced risk of diarrhea in PLHIV. Regular water treatment was required to achieve health benefits.

- **Factors Associated with Compliance Among Users of Solar Water Disinfection in Rural Bolivia**, IN *BMC Public Health.* 2011 Apr 4;11(1):210. Christen A, et al. ([Include link to full-text](#))

We investigated the behaviours associated with SODIS adoption among households assigned to receive SODIS promotion during a cluster-randomized trial in rural Bolivia. Distinct groups of SODIS-users were identified on the basis of six compliance indicators using principal components and cluster analysis. Most of the observed household characteristics showed limited potential to predict compliance with a comprehensive, year-long SODIS-promotion campaign; this finding reflects the complexity of behaviour change in the context of household water treatment. However, our findings also suggest that the motivation to adopt new water treatment habits and to acquire new knowledge about drinking water treatment is associated with prior engagements in sanitary hygiene and with the experience of contemporary family health concerns.

- **Photocatalytic Enhancement for Solar Disinfection of Water: A Review**, IN *International Journal of Photoenergy* 2011. J. Anthony Byrne, et al. ([Link to full-text](#))
 There are a number of parameters that affect the efficacy of SODIS, including the solar irradiance, the quality of the water, and the nature of the contamination. One approach to SODIS enhancement is the use of semiconductor photocatalysis to produce highly reactive species that can destroy organic pollutants and inactivate water pathogens. This paper presents a critical review concerning semiconductor photocatalysis as a potential enhancement technology for solar disinfection of water.
- **Sustainable Use of Arsenic-Removing Sand Filters in Vietnam: Psychological and Social Factors**, IN *Environ Sci Technol.* 2011 Mar 28. Tobias R, Berg M. ([Link to full-text](#))
 This study investigated the sustainable use of arsenic-removing sand filters in Vietnam. Based on questionnaire surveys, data were gathered in 319 rural households and analyzed with regression models. Psychological factors explained significant variance in the investigated key behaviors. Significant factors included perceived improvements in water healthiness and taste, monetary costs, social norms, and affective influences. In questions with open answers, interviewees mentioned various practical problems, particularly those related to the inflexibility of the device and the effort of changing the sand. Interestingly, many interviewees use the sand filters to remove iron from the water but are unaware of problems with arsenic.

REPORTS

- **Household Water Treatment and Storage (HWTS) Guidelines, 2011**. PATH. ([Link to full-text](#)) These guidelines provide evidence-based criteria for effective, commercially viable products that meet or exceed user expectations for long-term use. They take into account the unique needs of users in the developing world.
- **Household Water Treatment: Evidence of Effectiveness and Issues in Scaling Up, 2010**. A presentation by Thomas Clasen. ([Link to full-text](#)) This presentation gives an overview of the potential of HWTS, provides evidence of HWTS effectiveness and

discusses issues in scaling up HWTS interventions.

- **USAID: Point-of-Use Water Treatment: What Do We Know? How to Move Forward? 2010.** ([Link to full-text](#))

The United States Agency for International Development (USAID)-sponsored meeting: Household Water Treatment: What Do We Know? How to Move Forward? was held November 5, 2010. Attendees, a mixture of water treatment experts, Point-Of-Use Water Disinfection and Zinc Treatment Project (POUZN) project implementers, and donors, came together to share lessons learned from the POUZN projects in several countries, to identify remaining challenges to sustainability and scaling up, and to discuss the way forward for ensuring safe drinking water in the home.

- **Social, Cultural and Behavioral Correlates of Household Water Treatment and Storage, 2010.** JHU CCP. ([Link to full-text](#))

The authors discuss the many individual, household and community level factors that play a role in water treatment behavior and offer a model that can be used to improve the design and effectiveness of water treatment programs. The Model of Communication for Water Treatment and Safe Storage Behavior is based on behavior change and communication theories that have been applied and tested worldwide by CCP across several health areas, including water treatment.

- **User Testing of Household Water Treatment and Storage Products, 2011.** PATH. ([Link to full-text](#))

PATH's Safe Water Project is implementing an innovative project with the goal of enabling commercial enterprises to produce, distribute, sell, and maintain effective household water treatment and storage products for low-income populations in multiple developing countries around the world. This report shares the findings from user testing conducted for five such products in Andhra Pradesh, India, in 2009.

SELECTED WEBSITES

- [CDC SafeWater System](#)
- [Centre for Affordable Water & Sanitation Technology \(CAWST\)](#)
- [EAWAG - Gravity-driven membrane disinfection \(GDMD\) for household water treatment in Kenya](#)
- [IDE- Ceramic Water Purifier](#)
- [International Water Association Water Wiki on HWTS](#)
- [Massachusetts Institute of Technology/Water and Sanitation](#)
- [PATH Safe Water Project](#)
- [SODIS – Solar Water Disinfection](#)
- [USAID Watershed Public-Private Partnership Clean Water System in Vietnam](#)
- [WHO Network to Promote Household Water Treatment & Safe Storage](#)

WASHplus Updates will highlight topics such as Urban WASH, Indoor Air Quality, Innovation, Household Water Treatment and Storage, Handwashing, Integration, and more on a rotating

basis. If you would like to feature your organization's materials in upcoming issues, please send them to Dan Campbell, WASHplus Knowledge Resources Specialist, at dacampbell@aed.org.



About WASHplus - WASHplus, a five-year project funded through USAID's Bureau for Global Health, creates supportive environments for healthy households and communities by delivering high-impact interventions in water, sanitation, hygiene (WASH) and indoor air quality (IAQ). WASHplus uses proven, at-scale interventions to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under five years of age globally. For information, visit www.washplus.org or contact: washplus@aed.org.

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