

Clean & Safe Water for a Healthy World

Three-day celebrations for World Water Day in Nairobi, Kenya, kicked off on 20th March, 2010 bringing together scientists, policy-makers and others to discuss how to address the challenges posed by degrading water quality worldwide. The General Assembly designated the first World Water Day in 1993, and on 22nd March every year since, the focus has been on a different aspect of freshwater sustainability, including sanitation and water scarcity.

As a means of focusing attention on the importance of water quality, **Clean Water for a Healthy World** was chosen as the theme of this year's (2010) World Water Day. The theme was meant at refocusing the importance of water quality, alongside its quantity. The World Water Day 2010 and its campaign were envisaged to:

- a) Raise awareness about sustaining healthy ecosystems and human well-being through addressing the increasing water quality challenges in water management and
- b) Raise the profile of water quality by encouraging governments, organizations, communities, and individuals around the world to actively engage in proactively addressing water quality.

To acknowledge and create awareness on the role of Household Water Treatment & Safe Storage (HWTS) technologies in addressing the increasing water quality challenges, different HWTS technologies were exhibited by various organizations during the World Water Day celebrations at the UN-Gigiri and in Mombasa, Kaloleni. Among the HWTS technologies exhibited were; Solar Water Disinfection (SODIS), Bio-Sand Water filter, Chlorine Dispenser, Ceramic Water Filter and the E-WAT technology.

The SODIS Reference Centre of Kenya Water for Health Organization took a leading role in partnership with UNICEF –Kenya Office in organizing for the World Water Day Celebrations held at UN offices Gigiri, Nairobi and Mwinjo Primary School Kaloleni, Mombasa, Coast Province on 22nd March 2010.

The event, which was marked globally and sponsored by UNEP, UNICEF and other organizations aimed at creating awareness on the importance of HWTS methods. The Kenya Water for Health Organization (KWAHO) through its SODIS Reference Centre conducted several activities throughout the week. Among them, community sensitization, mobilization on HWTS, distribution of IEC materials and organizing exhibitions.

By Francis Kage, Programmes Officer SODIS Reference Centre

IN THIS ISSUE

Clean and safe water for a healthy living	1
Unsafe water kills more people than war, Ban says on World Day.....	2
Progress on key activities from the SODIS Reference Centre	3
SODIS roll out in ENHANCE communities in Kenya.....	4
SODIS Water Research Project	4



Eng. David Stower (In glasses) Permanent Secretary in the Ministry of Water & Irrigation tours SODIS stand during the World Water Day Celebrations



Celebrations to mark World Water Day in Mombasa

Unsafe water kills more people than war, Ban says on World Day

More people die from unsafe water than from all forms of violence, including war, Secretary-General Ban Ki-moon said, calling for better protection and sustainable management of one of the Earth's most precious resources on the occasion of World Water Day.

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"These deaths are an affront to our common humanity, and undermine the efforts of many countries to achieve their development potential," Mr. Ban said in his message for the Day, which this year focuses on "Clean Water for a Healthy World" as its theme.

"Our growing population's need for water for food, raw materials and energy is increasingly competing with nature's own demands for water to sustain already imperilled ecosystems and the services on which we depend," he noted. "Day after day, we pour millions of tons of untreated sewage and industrial and agricultural waste into the world's water systems. Clean water has become scarce and will become even scarcer with the onset of climate change," added the Secretary-General.

In his message, Mr. Ban highlighted that water is vitally linked to all UN development goals, including maternal and child health and life expectancy, women's empowerment, food security, sustainable development and climate change adaptation and mitigation. As such, the General Assembly recognized 2005-2015 as the International Decade for Action "Water for Life."

In doing so, it called for a greater focus on water-related issues at all levels and for the implementation of water-related programmes to achieve internationally agreed upon goals, including the Millennium Development Goals (MDGs) – an agenda for poverty reduction agreed to by world leaders in 2000.

The Secretary-General said that the poor "continue to suffer first and most from pollution, water shortages and the lack of adequate sanitation," even while world leaders have the "know-how to solve these challenges and become better stewards of our water resources." In order to address these gaps and with the looming 2015 deadline to fulfil the MDGs, the UN will host a high-level thematic debate in

September to coincide with the opening of the Assembly's annual General Debate in New York.

The Secretary-General has called on Member States to approve and incorporate an accelerated action plan during the summit, saying an inability to meet the MDGs would be an "unacceptable failure, moral and practical." Every day around the world, 2 million tons of sewage and industrial and agricultural waste are poured in the earth's waters, while one child under the age of five dies every 20 seconds from water-related diseases, according to the UN Environment Programme (UNEP).

In a new report, the agency points out that an investment of \$20 million in low-cost water technologies, such as drip irrigation and treadle pumps, could potentially lift 100 million poor farming families out of extreme poverty.

The publication, entitled **Clearing the Waters: A focus on Water Quality**



Burst leaking pipes as source of drinking water

Solution, found that repairing leaky water and sewage networks can not only secure

water supplies, but also lower pollution and boost employment.

In some poorer nations, more than half of treated water is lost to leaks, but by some estimates, saving just half of the water could benefit 90 million people without additional investment. "Human activity over the past 50 years is responsible for unprecedented pollution, and the quality of the world's water resources is increasingly challenged," said UNEP Executive Director Achim Steiner.

"It may seem like an overwhelming challenge but there are enough solutions where human ingenuity allied to technology and investments in nature's purification systems – such as wetlands, forests and mangroves – can deliver clean water for a healthy world."

In another report also launched during the water day, UNEP said that transforming wastewater – a combination of fertilizer run-off, sewage and other wastes – into clean resources poses a key challenge, as the world undergoes rapid urbanization, industrialization and stepped up demand for meat and other foods.

[Sick Water?: the Central Role of Wastewater Management in Sustainable Development](#) noted that many substances that make wastewater a pollutant, such as nitrogen and phosphorus, can be used as fertilizers for agriculture. It can also generate gases to fuel power stations and for cooking.

Currently, some 10 per cent of the global population is eating food grown using wastewater for irrigation and fertilization, and with better management and farmer training, the report said, this could be increased substantially.

The 192-member body held a day-long interactive dialogue on water and the "Water for Life" International Decade, featuring three panel discussions on the MDGs, climate change and peace and security. "Access to clean water and adequate sanitation are a prerequisite for lifting people out of poverty," Deputy Secretary UN-General Asha-Rose Migiro said at the event in New York.

At present, seven out of 10 people without improved sanitation live in rural areas, but the number of people without adequate sanitation is set to soar as urban populations grow, she said. Cooperation and public participation, Ms. Migiro stressed, are vital in managing transboundary water issues.

Assembly President Ali Treki told reporters that he hoped the dialogue will "contribute to efforts for a global solution," underscoring the need to "take stock of where we stand" at the midway point of the International Decade.

source: <http://www.environmental-expert.com>, March 26, 2010



Polluted water source

Progress on Key Activities from the SODIS Reference Centre

HWTS Training Workshop in Kisumu

The SODIS Reference Centre organized one-day Household Water Treatment Safe Storage (HWTS) training for SODIS Nyalenda and HWTS Project staff at St. Anne's Guest House, Kisumu on the 2nd of February 2010. The workshop brought together 11 participants drawn from SODIS Nyalenda staff, KWAHO HWTS project and Government Public Health Officers from Kisumu Municipality.

The objectives of the workshop were to facilitate skills development for the project staff, equip the project staff with knowledge on all approved HWTS technologies and to provide a forum to critique all HWTS technologies and discuss circumstance when each of the method is most appropriate in order to enable staff to carry out effective promotion of HWTS. The workshop was facilitated by Francis Kage, Lillian Okomo, and Joshua Otieno all from the SODIS Reference Centre.

HWTS Training for Government Public Health Officers Held

Government Public Health Officers from Nyanza and Rift Valley Provinces were equipped with skills to improve their delivery of HWTS Services efficiently within the local communities, as well as strengthen their knowledge on water and sanitation in their areas of operation through information sharing.



Proceedings during the Public Health Officers training in Rift Valley

This was observed during the HWTS training Workshops held in Eldoret for the Government Public Health Officers from Rift Valley and Homabay for the Government Public Health Officers from Nyanza Province from 29th - 31st March and 1st - 3rd April 2010 respectively. Key issues discussed at the workshop included Introduction to SODIS & exposure of SODIS bottles, Flocculation and Sedimentation, Pasteurization & boiling, Water testing: preparing for samples, Filtration & ceramic filters, Social Marketing and promotion among other topics.

Present at both workshops were 33 Government Public Health Officers representing their districts. The workshop was also attended by the Provincial Public Health Officer from Rift Valley and Nyanza Provinces Mr. Isaac Ruto and Mr. Tom Andebe respectively



SODIS demonstration for Public Health Officers, Homabay

Household Water Treatment and Safe Storage (HWTS) promotion project begins

There is need for provision of adequate safe drinking water and sanitation facilities. Statistics have shown that in the world today, 2.6 billion people do not have access to decent sanitation facilities and another 1.1 billion cannot access safe drinking water.

In order to reverse this trend UNICEF Kenya Office in partnership with, KWAHO is implementing a Household Water Treatment & Safe Storage (HWTS) Project that strives to promote healthy communities by promoting HWTS methods with hygiene promotion and education. The methods being promoted are Chlorination, Solar Water Disinfection, and Ceramic & Bio Sand filtration among other methods. The project is being implemented in Kisumu East, in Nyanza Province and Budalangi district, in Western Province.



Demonstration of various HWTS methods

SODIS Nyalenda in partnership with Community Health Centers.

SODIS Nyalenda project is one of the Kenya Water for Health Organization (KWAHO) working with three Community Health Centers / Clinics namely Pandpieri Health Centre, Joel Omino Clinic and Kowino Health Centre in Kisumu, Nyanza Province to promote and disseminate information on SODIS to the people living in, within and around the slum. During this exercise mobilization and training of staff from the centers as an entry point was done by SODIS promoters. Demonstration stands at strategic points are placed within the center whereby promoters train and demonstrate to patients and other clients visiting the centers three times a week on SODIS

So far, the strategy has proven very successful as over 45 staff including nurses, support staff, clients visiting and more than 400 patients at the center have been trained and issued with SODIS flyers and bottles. Worth noting is the confidence and demand that has been created through this approach as the people trained at the center believe more because of the partnership with health personnel. Besides, the demand for SODIS has increased as people who visit the centers from neighboring slum i.e Manyatta have approached KWAHO to train them on SODIS too.

One of the factors that have enhanced success is the personal involvement and support by management of these health centers who have given KWAHO permission to use its premises and nurses who train and also advise the patients to attend trainings by promoters. Besides they emphasize to the patients to embrace SODIS and use it for treating their drinking water as it is an effective and cheap method.

By Paul Ochieng, Project Officer SODIS Nyalenda

Lions club of Kisumu transport PET Bottles for free.

One of the challenges in SODIS promotion has been the availability of PET bottles for users. The Lions Club of Kisumu through Lions Pabari offered to transport PET bottles from Nairobi to Kisumu at no cost to be used during SODIS promotion at the SODIS Nyalenda Project on 11th March 2010.

The donation, which will go a long way to help promote SODIS in Nyalenda by saving more money to buy more PET Bottles thus reaching many households. The bottles were received by the SODIS Nyalenda Project Officer, Mr. Paul Ochieng at their offices.

The Media Breakfast

Kenya Water for Health Organization (KWAHO) through the SODIS Reference Centre held a media breakfast on 14th May, 2010 to inform the media more on SODIS as a Household Water Treatment & Safe Storage method and its health impact in an effort to combat diarrhoea diseases in the country. This was held at the Sarova Panafric Hotel and officiated by the Executive Director of KWAHO, Mrs. Catherine Mwango. Mrs. Mwango called on the media to bring out the issues of water and sanitation and especially Household Water Treatment & Safe Storage methods into the forefront for every Kenyan, and especially for the media to: 1) Advocate to government and partners to promote initiatives and programmes dedicated to water and sanitation. 2) Raise awareness on Household Water Treatment & Safe Storage methods and 3) educate the public on their roles and responsibilities in addressing problems of poor hygiene & sanitation.

The event was attended by over 15 different media representatives who form the Kenya Environment & Science Journalist Association (KENSJA) and other stakeholders in the water sector.

Acute Watery Diarrhoea /Cholera Updates - April 2010

The outbreak of cholera has cumulatively affected 18 Districts nationwide with a total of 1570 cases with 23 deaths recorded since January 2010. So far the outbreaks have been contained in 13 Districts. Cases of cholera continue to be recorded with five Districts namely Tharaka, Msambweni, Kwale, Mombasa and Kilindini reporting active transmission of cholera in the month of April.

Most of the districts reporting cholera outbreak are experiencing either prolonged drought or floods and are using water from shallow unprotected wells or water pools/ponds respectively.

Other than mass health education on basic personal hygiene practices and sensitization of the community on cholera outbreak, treatment of drinking water at the Point of Use (PoU) has

Continue to Page 4

SODIS roll out in ENHANCE communities in Kenya

A TOT training on SODIS conducted in May 2009 in Voi town by Kenya Water for Health Organization led to SODIS promoters gathering from five ENHANCE ADPs taking part in the training. At the moment the promoters are undertaking SODIS promotions in their respective ADPs. Training on use of Oxfam Del Agua Water testing kits and assessment of efficacy of SODIS at community level was conducted in August 2009.

In assessing the efficacy of SODIS, World Vision Kenya ENHANCE and ENHANCE TA coordinators attended a 2-day long training on how to use Del Agua Water Testing Kit (checking turbidity, PH, Chlorine and Bacteriological test) at Kenya Water For Health Organization (KWAHO) headquarters in Nairobi. The coordinators in turn trained CDMs, SODIS promoters, ADP and Ministry of Public Health & Sanitation staff at Mashuru ADP, World Vision Kenya on how to use Del Agua Water Testing Kit. The analysis of water samples for faecal coliforms was carried out by passing 100ml of water through a sterile filter. Any bacteria present in the water were caught in the filter.

The filter was then placed onto a growth medium (agar) which feeds coliform bacteria, but inhibits the growth of any other bacteria caught in the filter. To ensure that only faecal coliform bacteria are allowed to grow, the filter was kept at 44.5 oC in the kit's incubator until the bacteria multiply many times to form colonies of bacteria which can be seen with the naked eye. Faecal coliforms are recognised by their ability to produce a colour change (blue) in the culture medium.

All three water points were found to be contaminated with E.Coli bacteria. The reservoir in Olepolos village was found to be heavily contaminated compared to others. All points were not chlorinated at the time of the test. The PH level in all water points was within the acceptable limit for drinking water (6.5-9.5).

Following exposure of the samples under direct sun for 6 hours in a one liter bottle, the samples were tested again for bacteria. The results showed there was no single colony in the petri dishes from all water samples demonstrating the efficacy of SODIS in killing pathogenic bacteria that cause water born diseases especially diarrhoeal diseases. From the training done and the experiment carried out it was recommended

- SODIS promoters to continue promoting SODIS in the communities and schools to achieve wider coverage,
- SODIS promoters to conduct homes visits on weekly basis for the first month and monthly for the first year to make sure adoption of the method
- The ADP to facilitate with the Ministry of Public Health & Sanitation and other concerned government institutions to chlorinate all water points in the catchment area.

By Edwin Kimani, Programmes Officer World Vision Pwani Zone



KWAHO staff and the World Vision Kenya, ENHANCE Programme coordinators during the training on how to use the Del Agua Water Testing Kit at KWAHO Headquarters

SODIS Water Research Project

ICROSS Kenya has been working on SODIS since 1994 with Professor David Morley of the Institute of Child health, London. Partnership with the Royal College of Surgeons in Ireland has seen the first control trials of SODIS and a series of SODIS studies. These studies were encouraging and showed significant impact of SODIS in areas of semi desert and remote rural terrain where water was heavily contaminated. The most recent SODISWATER research project was funded by the European Union (EU) under the 6th Framework Programme (FP6), the study began in September 2006 till June 2009.

The aim of the SODISWATER project was to demonstrate that solar disinfection of drinking water is an effective intervention against a range of waterborne diarrhoeal diseases at household level and as emergency relief in the aftermath of natural or man-made disasters. The objectives of the SODISWATER project were:

1. To demonstrate that Solar Disinfection (SODIS) of drinking water is an appropriate, effective and acceptable intervention against waterborne disease for vulnerable communities in developing countries without reliable access to safe water.
2. To evaluate and test different diffusion and behavioural change strategies in areas with different social and cultural conditions for sustainable adoption of solar water disinfection.
3. To disseminate these research outcomes

throughout the international aid and emergency relief communities so that SODIS is adopted as one of a range of standard water quality interventions (e.g. filtration, chlorination, desalination, etc.) for use in the immediate aftermath of natural (Tsunami, flood, earthquake, hurricane/typhoon) or man-made disasters (war-zone, famine, refugee camp).

4. To develop a range of simple SODIS enhancement technological innovations that can be matched to varying socio-economic conditions. - UV dissymmetric indicators of disinfection, photo catalytic inactivation and continuous flow compound parabolic collector arrays for small community distribution systems.

The project was carried out by an international team of researchers from 9 different groups in 7 countries within Africa and Europe.

The multidisciplinary international team has been investigating:

1. What health benefits can be directly associated with using solar disinfected drinking water in developing countries?
2. What factors influence people and communities to decide to adopt or reject SODIS in preference to some other household water treatment technology such as boiling, chlorination, and filtration?
3. Can the basic solar disinfection technique be improved with a range of simple and cost-effective enhancement technologies?
4. Are there any important waterborne diseases that are not susceptible to SODIS?

The results of this study are being analyzed by the Royal College of Surgeons in Ireland and will be disseminated throughout the international aid and emergency relief communities so that SODIS is adopted as one of a range of standard water quality interventions for use. Initial data are encouraging and currently we are looking at community adoption and use of SODIS in a range of communities. The important part of all these studies is not that they are useful but that people want to adapt SODIS. Unless people choose to use SODIS like any health intervention it will be useless. ICROSS has been working with our community health teams and programmes to integrate SODIS into daily practice. So far indications are encouraging with high rates of uptake. Over 60% of people continue to use SODIS after studies. Further studies are ongoing and a larger study is being developed at present to explore further developments of the SODIS model and its applications.

Dan Ngwiri Country Director, Icross Kenya

Continued from Page 3

been identified as a key intervention of diarrhoea outbreaks. Point-of-use water treatment has been shown to be one of the most effective and cost-effective means of preventing waterborne disease in development and emergency settings. Promoting household water treatment and safe storage (HWTS) helps vulnerable populations to take charge of their own water security by providing them with the knowledge and tools to treat their own drinking water.

¹ Ministry of Public Health & Sanitation- Disease Outbreaks Update as at 6th April 2010.

² Clasen T (2008) Scaling Up Household Water Treatment.

SODIS East Africa Reference Centre Newsletter is a Biannual Newsletter to inform you of the different activities being undertaken by the SODIS Reference Centre and SODIS projects.

We welcome your stories, ideas and comments in relation to Household Water Treatment and Safe storage (HWTS).

Lillian Shimanyula -Advocacy / Communication Officer, SRC

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