

SODIS implementation put to the test

Duebendorf, 19.8.2009. Recent findings of a health impact study conducted in Bolivia shows that solar disinfection in PET-bottles is often handled improperly. It would be wrong however, to stop the promotion of SODIS in developing countries based on this report. Instead, research has to focus on how to promote the SODIS method properly in the specific cultural and social context of the local community, to ensure that children, especially do not consume water with pathogenic germs and suffer the consequences of severe diarrhoea.

Solar Water Disinfection - SODIS - is a method that uses transparent PET-bottles and sunlight to disinfect drinking water. It is recognized by the WHO as appropriate technology for household water treatment in developing countries. Since its inception more than 20 years ago, a large body of scientific research has confirmed the efficiency of SODIS as an effective and low-cost way to treat microbiologically contaminated drinking water.

Almost 90% fewer cases of Cholera

Many health impact studies have been conducted that show a positive impact of SODIS practice in reducing diarrhoeal illnesses. The first studies conducted in Kenya by the Irish Royal College of Surgeons found a reduction of 16-24% of severe diarrhoea among SODIS users. In addition, children under the age of 6 had 88% less cases of Cholera during a Cholera epidemic in the project area. The protective effect of SODIS against Cholera was confirmed during the present Cholera epidemic in the North-Kivu Region in the Democratic Republic of Congo, where no Cholera cases were observed in the villages using SODIS.

Other health impact studies have been carried out in Bolivia and India which found a diarrhoea reduction of about 40% among SODIS users. Not surprisingly, an evaluation of the SODIS project in Kenya found that the proportion of treated water consumed has an important influence on diarrhoea. Even if a family treats part of their water with SODIS, they will not experience a positive health impact if they continue to consume more than 20% untreated water. The education of SODIS users therefore not only has to focus on establishing the regular practice of the method but also on eliminating the consumption of any untreated and contaminated water!

Correct Use of SODIS is important

For almost 10 years, the SODIS method has been promoted in developing countries in areas where people still drink heavily contaminated water. Presently, more than 3 million people in about 30 countries regularly use SODIS for the treatment of their drinking water. Educating people in the application of any new household water treatment method is a demanding task (as noted by WHO). Often people are reluctant to change their current behavior and adopt new hygiene practices such as hand-washing, use of improved sanitation infrastructure or water treatment.

The SODIS method is often difficult to promote in developing countries because people living in the villages and urban slums doubt that simply exposing a bottles to the sun will provide them with safe drinking water. An extended, careful and participatory training approach taking into account the cultural context and local habits, is a precondition for establishing a sustainable practice of SODIS in the project areas.

Years of working with project teams in different countries in a variety of contexts, has revealed that not all conditions are equally conducive for establishing SODIS practice. The most important factor to establish a high uptake of the method is the work of the promoters in the community. Highly motivated promoters seeking to facilitate behavioural change in the community by using participatory approaches are more likely to succeed than efforts to force a community into a certain practice by using a top-down approach. Community leaders and community members must take ownership of the need to improve their drinking water quality and this ownership should be established before the project begins.

Other success factors include a follow-up strategy that strengthens the newly acquired behavior and establishes a habit, the local availability of PET-bottles and a conducive environment including an endorsement by health authorities, visibility of others practicing the method, application and promotion in schools, health centers etc.

New Study is not representative

The previous findings on the positive impact of SODIS are complemented by the recent findings of a health impact study conducted in Bolivia. The researchers of this study found a statistically not significant diarrhoea reduction of 19% in the intervention group (consisting of SODIS users and non-users) compared to the control group of non-users. The report states that this effect cannot clearly be attributed to the intervention, (i.e. it could have occurred by chance alone).

The report also classified 30% of people in the intervention group as SODIS users on the basis of reporting from community-based field workers and bottles being exposed on the roof, however, only about 14% of people in the intervention group had SODIS treated water available for consumption in the household. As only those households with treated water available for consumption can be regarded as users, we assume that the actual number of users in the intervention area does not exceed 14%. In addition, the study did not look into the consistency of water consumption patterns; it is therefore not clear how much SODIS water versus untreated water actually was consumed by the small number of user households. It is apparent that the study in Bolivia has failed to establish broad and consistent SODIS practice in the intervention area and the basis to evaluate the health impact of the SODIS application was lacking. The question of why this specific intervention failed to gain more SODIS users should be analyzed in detail.

More research and training needed

Every day, about 4500 children die of dehydration due to diarrhoea. It would be wrong to stop the promotion of SODIS in developing countries based on the Bolivian study. There are too many successful implementations in other countries. The current research at the Swiss Institute for Aquatic Research, Eawag will continue to focus on how to promote the SODIS method properly in different cultural and social contexts.

The SODIS Reference Center is enabling projects in developing countries to introduce the SODIS technology, improve the access to safe drinking water and save children's lives. The Center and its partners currently contact donors and institutions in Switzerland and other countries to support these projects.

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