

# SODIS - WATER QUALITY IMPROVEMENT AT HOUSEHOLD LEVEL

## THE SODIS NETWORK IN LATIN AMERICA

### SUMMARY

In Latin America, the innovative method of Solar Water Disinfection (SODIS) is being promoted by the SODIS Foundation, an umbrella organisation which has built a network of over 100 partner institutions working on the research and implementation of SODIS. With an emphasis on 7 priority countries, SODIS has been implemented in the field under a wide range of socio-cultural settings. Most of the projects have been carried out by different NGOs, but in some countries the Ministries of Health have taken an active role and joined the implementation activities. SODIS is currently being officially recognized and promoted by two Ministries of Health in Latin America (Ecuador, Bolivia), and in several other countries the method is being evaluated in pilot projects.

At the end of 2003, the number of people using SODIS on a regular basis was estimated to be around 100,000



### THE CONTEXT

It is estimated that around 60 million people in Latin America do not have access to improved water supply (WHO/ UNICEF 2004). Additionally, most of the water supplied by distribution networks in rural areas is not being chlorinated, exposing the users to considerable health risks. The size of the problem was demonstrated most recently in the 1990s when in several countries cholera outbreaks took the lives of hundreds of people.

For many years, the issue of water quality has been addressed by campaigns that promote water treatment methods at the household level. While in some regions the method of water boiling was promoted, in other regions chlorination at the household level was given priority. Both methods have their benefits and limitations, mostly their cost and the change in taste of the treated water. Since the 1990s, another method at the household level is available: Solar Disinfection of Drinking Water, or 'SODIS'. This method is now being promoted as complementary to the other two methods of treating drinking water. Depending on the local circumstances, either one or a combination of the three methods may be most adequate.

The SODIS Foundation is a private non-profit organisation working in Latin America in order to improve the living conditions of people without access to safe drinking water. The institution was set up in 2001 after research projects showed that the method of Solar Disinfection of Drinking Water (SODIS) is a feasible and adequate method at the household level under a wide set of circumstances in Latin America, where sunshine in general is strong and water

quality poor. In its first phase of activities (2001-2005), the SODIS Foundation prioritized 7 countries where access to safe water is especially difficult. These countries are Bolivia, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, and Peru.



Fig. 1: SODIS is a low cost method for treating drinking water at household level.

## THE PROJECT

### Objectives

The operative objective of the SODIS Foundation is that 300,000 people in Latin America will be using SODIS on a regular basis for disinfecting their drinking water by 2005. Strategic objectives of the SODIS Foundation are to achieve official recognition of the SODIS method by Universities, Government entities, NGOs, and donor agencies.

### Strategy

The basic strategy of the SODIS Foundation is to build and strengthen a network of partner institutions working towards a common goal: to improve the living conditions of people who do not have access to safe drinking water.

The SODIS Foundation does not implement projects of its own. It defines adequate partner institutions that can include the concept of 'Safe Water' in their ongoing activities. Ideally, the promotional and educational activities needed for a successful diffusion of SODIS are combined with other activities at the household level. Increased impact on diarrhoea can be achieved by combining the idea of SODIS with healthy habits such as hand washing and keeping water in a safe place.

The SODIS Foundation focuses its activities on training of trainers, technical assistance to the partner organisations, and lobbying activities with key players in the region. Since 2003, the SODIS Foundation has shifted its focus away from solely promoting the method of SODIS to the innovative



Fig. 2: Exposure of SODIS bottles in front of a school



Fig. 3: SODIS Foundation provides technical assistance to partner organisations and trains trainers.

approach of 'Safe Water', which includes water treatment at the household level, safe water storage, and hygiene. When being offered a range of options for treating water, people can actively participate in the projects, and they can adjust the different options to their local needs and customs.

### Actors

The main partners of the SODIS Foundation are:

- Research institutions (Pan-American Centre for Sanitary and Environmental Engineering CEPIS in Peru, the Centre for Water and Environmental Sanitation CASA in Bolivia, the Swiss Federal Institute of Environmental Science and Technology (EAWAG) with its Department of Water and Sanitation in Developing Countries (SANDEC) and the Swiss Tropical Institute (STI).
- NGOs (Red Cross, Project Concern International, PLAN International, Catholic Relief Services, etc.)
- Government entities (Ministries of Health, Ministries of Housing, Water Supply Entities)
- International aid and development agencies (UNICEF, Water and Sanitation Program of the World Bank, the Swiss Agency for Development and Cooperation SDC, etc.)
- Professional associations (Inter-American Association of Environmental and Sanitary Engineers AIDIS)

### Financing

During the first phase (2001-2005), the SODIS Foundation received funding from the AVINA Foundation ([www.avina.net](http://www.avina.net)), from the Development Service of Liechtenstein (LED), from the Michel Comte Water Foundation ([www.swisswaterfoundation.org](http://www.swisswaterfoundation.org)), from the Swiss Agency for Development and Cooperation ([www.sdc.admin.ch](http://www.sdc.admin.ch)), from Lions Clubs ([www.lionsclubs.org](http://www.lionsclubs.org)), and from corporate donors such as IBM Switzerland.



Fig. 4: All SODIS projects in Latin America reported a reduction of diarrhoea especially among children

## ACHIEVEMENTS AND FACTORS OF SUCCESS

- At the end of 2003, it was estimated that 100,000 people in Latin America use SODIS regularly for obtaining safe drinking water.
- More than 30 projects including SODIS are currently being implemented in 7 countries (2004).
- The Ministries of Health of Ecuador and Bolivia not only officially accepted SODIS as an adequate water treatment method; they actively promote it in country-wide programs.
- More than 100 institutions participate in the SODIS network in Latin America.
- More than 3,000 trainers have been trained by the SODIS Foundation between 2000 and 2003.
- SODIS has been recognized as 'Best Practice' by the UN-Habitat programme.
- SODIS has won the first prize at the World Water Forum held in The Hague, among 63 participants from 27 countries.
- Alone in Bolivia, more than 1000 rural schools are implementing SODIS activities.
- A set of promotional and educational materials have been produced, some in Spanish, others in Quechua or other local languages.
- Water quality has become a topic that regularly appears in the media.
- A research project implemented by the Swiss Tropical Institute in Mizque, Bolivia, has shown that SODIS significantly reduces diarrhoea rates.
- Regular monitoring of the households showed that

SODIS provides water according to WHO standards if properly implemented. The monitoring also serves in order to detect difficulties and mistakes in the process of the water treatment.

- Reduction in diarrhoea rates have been reported by all the projects which collected this type of data.
- SODIS has been included in many guidelines and manuals for water treatment and sanitation by governments as well as by NGOs.

### Factors that facilitated these achievements

- Solid scientific base: The results of several research projects have been published in international peer-reviewed journals.
- Success of pilot projects in several countries (Colombia, Bolivia, and Peru).
- Urge for action: Given the large number of people without access to safe drinking water, fast and simple solutions are needed.
- Importance of the problem: High prevalence of diarrhoea, especially among children under 5 years of age.
- Proven impact: SODIS lowers diarrhoea rates.
- Ease and simplicity of implementation projects.
- Strong partner institutions: Government entities and NGOs with ongoing projects where the concept of 'Safe Water' easily could be introduced.
- Continuous research and development of new concepts, such as the concept of 'Safe Water'.
- High importance of water and health with some donors.
- Successful fundraising campaign on behalf of the SODIS Foundation and its partner institutions.



Fig. 5: Schools are an excellent entry point for introducing SODIS to a community

## THE CHALLENGES

### Constraints

The SODIS method has some technical limitations: in places where the climate is cloudy most of the year or where the water is turbid, the effectiveness is reduced. The turbidity problem can be overcome by adding a pre-treatment step before exposing the bottles to sunlight.

The only hardware needed for SODIS are clear plastic bottles. In general, they are easily available over large parts of Latin America as most of the soft drinks and mineral waters today are sold in plastic bottles. However, there are some remote areas where the consumption of bottled drinks is very limited, under these circumstances special efforts have to be made to make the bottles available to the end users.

### Potential for scaling up

Currently, around 60 million people in Latin America do not have access to improved water supply. Even if the Millennium Development Goal for water supply will be achieved, there still will be millions of people in need of an immediate solution for improving the quality of their drinking water. Additionally, there are millions of people living in small settlements in rural areas who have access to piped water, but the water in these systems often is not being treated. These people also will rely on a barrier at their home in order to control the risks of drinking untreated water.

### Lessons learnt

SODIS proved especially impacting when introduced in schools. It can be included in different curricula, but also the practice of establishing 'SODIS corners' at the class rooms proved effective. However, SODIS should not remain only at schools but also reach the homes.

Treating water at the household level has a lot to do with daily habits of the families. The traditional approach of diffusing SODIS as a technological innovation does not have a strong impact on the level of habits; therefore, the methodology had to be adjusted. The current approach proposed by the SODIS Foundation and its partners focuses on social marketing and on guiding the process of changing habits in a desired manner. This process is slow and takes considerable effort on the level of household visits. Over the past years it has been shown that visits at the household level are needed if one wishes to change habits of treating water for consumption.

An important lesson learnt by the SODIS Foundation is that initiatives trying to promote one single solution offer very limited space of community involvement. Therefore, the focus was widened up and the innovative concept of 'Safe Water' now is being promoted. This not only improves

the active participation of the end users, it also is expected that behaviours acquired in this way will be sustained over a long time.

The process of promoting an innovative method has proved to be lengthy. Especially if the official recognition by central units is required, several years of lobbying and advocacy at different levels are needed.

The strategy of forming and strengthening a network of partner institutions instead of building up another independent NGO has proven very successful for the SODIS Foundation. It has enabled the partners to exchange experiences and coordinate their work, which in turn has brought about good results in the field.



Fig. 6: Girl in Bolivia with her selfmade SODIS bottle bag

## REFERENCES & PARTNERS

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