

NEED FOR PROJECT SUPPORT

The average training costs amount to about Euro 7 per family (depending on local conditions). Projects in the range of Euro 30,000 to 50,000 per year are currently being implemented.

For every Euro invested in SODIS training, SODIS users save about Euro 4 in the treatment of diarrhoeal diseases, and the public sector even avoids costs of approximately Euro 50 (treatment of diarrhoea and production gains).

Project implementation requires financing of the following aspects:

- Training and continuing education of local partners by Eawag
- Salaries of local NGO specialists
- Salaries of local SODIS promoters
- Development and production of locally relevant training material
- Training workshops
- Transport
- Dissemination of SODIS information by local mass media (radio, TV, newspapers)
- Advocacy and networking activities
- Project support and controlling by Eawag



SOLAR WATER DISINFECTION

IMPROVED HEALTH WITH SUNLIGHT AND PET-BOTTLES

DRINKING WATER IN DEVELOPING COUNTRIES

Water in sufficient quantity and good quality is essential for life. Roughly a sixth of the world population or 1.1 billion people have no access to improved water supplies and far more consume contaminated water every day. The lack of safe drinking water thus leads to a high risk of waterborne diseases, cholera, typhoid fever, hepatitis A, amoebic and bacillary dysentery, as well as other diarrhoeal diseases. Every day, 4500 children die of diarrhoea!

Public water supplies in developing countries often fail to produce and distribute water safe for consumption. Even if safe water is provided at the source, transport, storage and handling of water in the household often lead to secondary contamination before consumption. Point-of-use water treatment shortly prior to consumption will significantly reduce the risk of drinking water contamination. Household water treatment methods are therefore gaining increased importance with regard to reducing the global diarrhoea burden. Solar Water Disinfection (SODIS) proves to be

a simple method to improve the microbiological quality of drinking water at household level.



Fig. 1: Consumption of contaminated drinking water causes diarrhoeal diseases

SODIS, AN EFFICIENT AND SIMPLE WATER TREATMENT METHOD

Scientists at Eawag, the Swiss Federal Institute of Aquatic Science and Technology of the ETH Domain, extensively tested and further improved SODIS in the laboratory and in developing countries.

SODIS uses sunlight to destroy pathogenic microorganisms in drinking water. Microbiologically contaminated water is filled into transparent PET bottles and exposed to full sunlight for six hours. During sun exposure, UV-A radiation destroys bacteria, viruses, Giardia and Cryptosporidium (<http://www.sodis.ch/>)

For a sustained use of SODIS, the following factors have to be considered:

- SODIS uses locally available resources, sunlight and PET bottles.
- SODIS requires 6 hours of solar exposure under clear up to 50% cloudy skies and 2 days of consecutive exposure under very cloudy skies.
- Since highly turbid water reduces solar radiation intensity, the water has to be pre-treated by flocculation/sedimentation or filtration.
- As UV-A radiation is reduced by 50% at a water depth of 10 cm, shallow containers are required for SODIS application.

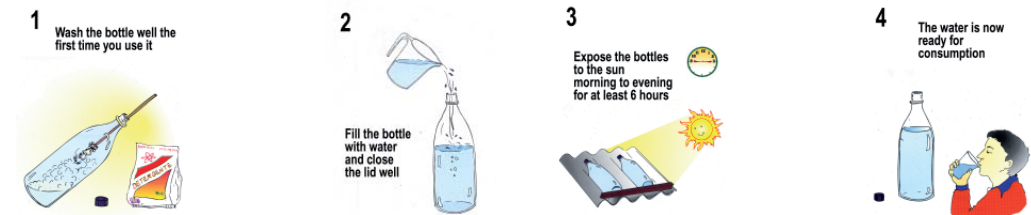
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SODIS REDUCES DIARRHOEAL DISEASES

Several epidemiological health impact studies conducted in SODIS project areas revealed that diarrhoea incidence dropped on average by 50% among SODIS users. Furthermore, the studies proved that SODIS also limits the spread of cholera and typhoid fever epidemics. SODIS therefore significantly contributes to reducing infant mortality, malnutrition and to increasing child attendance in school. Further health improvements are achieved in combination with hand-washing promotion programmes in the SODIS project areas.

WHO (World Health Organisation) recommends SODIS as a household water treatment method.



Fig.2: SODIS protects against diarrhoeal diseases and lowers infant mortality

PROMOTION AND DISSEMINATION OF SODIS IN DEVELOPING COUNTRIES

SODIS use is extremely simple – PET bottles and sunlight are merely required to treat contaminated water. The SODIS method is thus also accessible to lower-income brackets (with less than one USD a day).

SODIS has one disadvantage: this low-tech method cannot be disseminated commercially as its marketability does not promise financial gains. Financial resources are, however, required to spread the SODIS knowledge in developing countries and to bring about behavioural change. Charitable



Fig.3: Lions supports the dissemination of SODIS in Africa and Latin America

funds are thus necessary for SODIS promotion campaigns and training of users in developing countries.

The SODIS Reference Centre at Eawag is therefore committed since 1995 to fund-raising, technical support and consulting of local partner organisations for the dissemination of SODIS in developing countries. Some 14 projects are currently financed in 11 African countries (Kenya, Uganda, Zambia, Cameroon, DR of Congo, Sierra Leone, Senegal, Guinea, Togo, Burkina Faso, Zimbabwe) and 13 projects in 5 South American countries (Bolivia, Ecuador, Peru, Honduras, Guatemala).

More than 2.1 million people in some 33 countries currently use SODIS. This is a considerable number; yet, much remains to be done to provide clean drinking water to 1.1 billion people without safe water supplies

HOW CAN SODIS PROJECTS BE SUCCESSFULLY IMPLEMENTED?

Raising awareness and creating behavioural change

Although practical application of SODIS requires few resources – successful dissemination and promotion of the method can only be achieved through comprehensive promotion strategies. Scepticism encountered at all levels about the efficiency of the method appears to be the greatest stumbling block to spontaneous SODIS dissemination. Careful training of the population in developing countries and water quality demonstration tests can dispel these doubts. When dealing with poorly educated population groups, awareness of the link between water and health should be raised before target populations are willing to treat drinking water and apply SODIS. Our experience



Fig.5: Promoters explaining the use of SODIS during regular house visits



Fig.4: SODIS promotion through plays in schools and at local meetings

with SODIS projects in different developing countries has also revealed that behavioural change leading to improved hygiene seems difficult and can only be achieved after prolonged and careful training by health promoters.

Expertise of the local partner organisation

The key factor to project success is dependent on the expertise and commitment of the local partner organisation. The local partner should be experienced in public health training of the local population and dispose of a structure of qualified health promoters. These must be well versed in dealing with the target population and originate from the same cultural background. Our rule of thumb is: one promoter per 50 households to visit his/her "protégés" at least once a month for a period of one year.

Availability of PET bottles

Sustainable SODIS projects are dependent on locally available PET bottles. Without a local supply of PET bottles, long-term SODIS application cannot be ensured.

Information campaigns and networking

SODIS projects should offer an incentive to further develop and disseminate SODIS beyond the local project area to regional and national levels. Networks are crucial for the widespread use of the SODIS method. Network activities, such as the exchange of information, PR and media campaigns, national training events, the involvement of further organisations and institutions (government agencies, health centres, schools, universities, community organisations, and other NGOs) are thus vital for SODIS project planning.

Careful project management and controlling

Thorough evaluation and preparation of project proposals in combination with extensive consulting and support during project implementation are important prerequisites for successful SODIS project improvement and for allowing numerous people to profit from this simple and cost-effective method.

The SODIS Reference Centre at Eawag heads the SODIS programme and coordinates SODIS activities abroad: during project implementation, the local partners are trained and consulting services provided, project progress is controlled through field tests, project reports are evaluated, and project accounting is carefully examined.