

Clean drinking water for all?

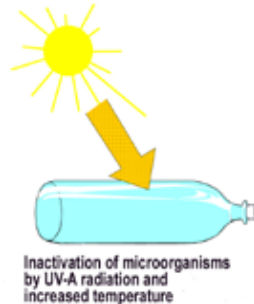
At least one third of the population in developing countries has no access to safe drinking water. The lack of adequate water supply and sanitation facilities causes a serious health hazard and exposes many to the risk of water-borne diseases: There are about 4 billion cases of diarrhoea per

year, out of which 2.5 million cases end in death, mostly among children under the age of five. This is equivalent to one child dying every 15 seconds or 20 jumbo jets crashing every day. Solar Water Disinfection (SODIS) can contribute to improve this precarious situation.

What is SODIS?

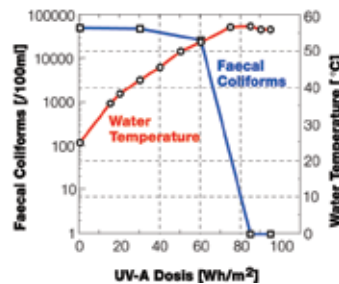
Solar water disinfection is a water treatment method:

- to improve the microbiological quality of drinking water
- using solar UV-A radiation and temperature to inactivate pathogens causing diarrhoea
- used at household level under the responsibility of the individual user
- that is simple in application
- that relies on locally available resources, plastic bottles, and sunlight, a renewable energy source
- that is replicable with very low investment costs

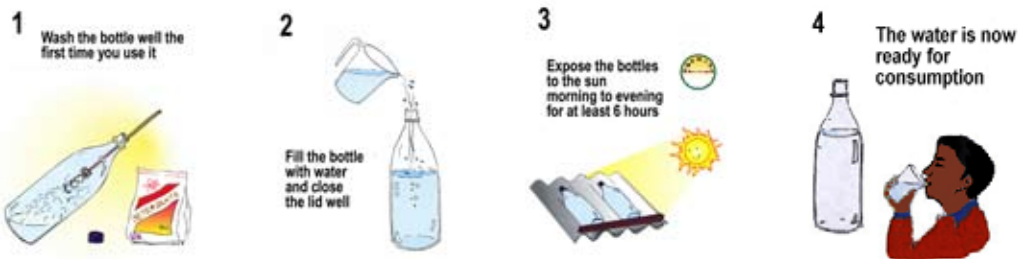


How does SODIS work?

SODIS, Solar water disinfection is a simple method to improve the quality of drinking water by using sunlight to inactivate pathogens causing diarrhoea. **Contaminated water is filled into transparent plastic bottles and exposed to the full sunlight for 6 hours.** During the exposure, the UV-A radiation (wavelength 320-400nm) of the sunlight destroys the pathogens. A synergy of UV-A and temperature occurs, if the water temperature rises above 45°C.



How to apply SODIS?



Limitations of SODIS

- SODIS does not change the chemical water quality
 - SODIS does not increase the water quantity or reduce water shortages
 - SODIS requires relatively clear water (turbidity less than 30 NTU)
 - SODIS is not useful to treat large volumes of water
 - SODIS requires suitable climate and weather conditions. Regions well suited for SODIS are located between latitude 35°N and 35°S
- exposure time:
- ⇒ 6 hours under bright or up to 50% cloudy sky
 - ⇒ 2 consecutive day under 100% cloudy sky
 - ⇒ During days of continuous rainfall, SODIS does not perform satisfactorily. Water boiling or rainwater harvesting is recommended during these days.



SODIS application is simple



SODIS uses local resources



SODIS water tastes good

SODIS development and dissemination

Research on SODIS was taken up by SANDEC, the Department of Water and Sanitation (www.sandec.ch) at the EAWAG (Swiss Federal Institute for Aquatic Science and Research - www.eawag.ch) in 1991. EAWAG is a Swiss competence centre for national and international water research. Thorough scientific investigation in the laboratory and in the field of developing countries has shown that SODIS is an effective method for the disinfection of water at household level.

Technical information on SODIS is available in the SODIS manual:
http://www.sodis.ch/files/SODIS_Manual_english.pdf

Local NGO's and Government Organisations are disseminating and promoting SODIS in developing countries under the coordination of EAWAG/SANDEC since 1999. At present, SODIS is used for the daily treatment of drinking water by about 2 Million users in more than 20 countries worldwide.

Several health impact studies have been conducted in SODIS users' communities. These assessments have shown that the health benefits of SODIS use are significant: diarrhoea incidence of SODIS users was reduced by 20 to 50%! Further health benefits are achieved by combining SODIS projects with hand washing programmes.

SODIS is recommended by WHO (World Health Organisation) as water disinfection method at household level and is part of WHO's international network to promote household water treatment and safe storage.

http://www.who.int/household_water/resources/en/

SODIS is a low-cost method as it can be applied with locally available resources such as sunlight and empty PET-bottles. However, the promotion of SODIS requires a long-term intensive education approach through well trained community workers and costs about 2 USD per person trained.

Information on implementing SODIS projects is available in the SODIS training manual:
http://www.sodis.ch/files/TrainingManual_sm.pdf

SODIS is used at household level under the responsibility of the user. Therefore EAWAG is not liable for any harm caused by a faulty or inadequate application of the water treatment process.

Further Information:

www.sodis.ch

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**In
6 hours
drinking water**

Solar Water Disinfection

**A Water Treatment Process
Used at Household Level**