

## Polluted water for the poor?

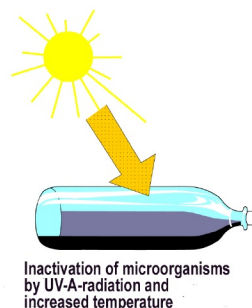
**At least one third of the population in developing countries has no access to safe drinking water.** The lack of adequate water supply and sanitation facilities causes a serious health hazard and exposes many to the risk of water-borne diseases: There are about 4 billion cases of diarrhoea per

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?

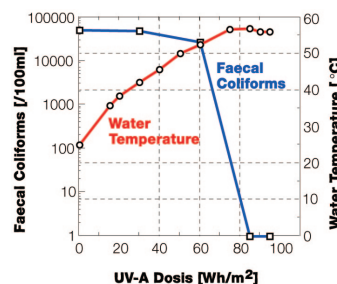
**Solar water disinfection is a water treatment method:**

- 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 sun destroys the pathogens. Sunlight is disinfecting the water through two effects: Radiation in the spectrum of UV-A (wavelength 320-400nm) and increased water temperature. If the water temperature rises above 50°C, the disinfection process only requires one hour solar exposure.



## How to apply SODIS?

1 Wash the bottle well the first time you use it



2

Fill the bottle 3/4 full with water



3 Shake the bottle for 20 seconds



4

Now fill up the bottle fully and close the lid



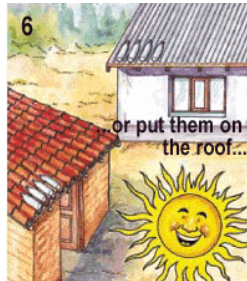
5

Place the bottles on a corrugated iron sheet



6

or put them on the roof...



7



Expose the bottle to the sun from morning until evening for at least six hours

8

The water is now ready for consumption



## 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 weather conditions 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

## What is the role of EAWAG?

Since 1991 EAWAG (The Swiss Federal Institute for Environmental Science and Technology) and SANDEC (EAWAG's Department of Water and Sanitation in Developing Countries) conducted extensive laboratory and field tests to develop and test the Solar Water Disinfection Process (SODIS). Practical experience in the application of SODIS has been collected by: •CINARA in Cali, Colombia •Programa de Aguas in Cochabamba, Bolivia •NATURAMA in Ouagadougou, Burkina Faso •CREPA Togo in Lomé, Togo •Yayasan Dian Desa in Yogyakarta, Indonesia •Environmental Concern in Khon Kaen, Thailand •Ningxia Sanitation and Antiepidemic Station in Yinchuan, China.

At present, EAWAG/ SANDEC is providing information, technical support and advice to local institutions in developing countries for the worldwide promotion and dissemination of Solar Water Disinfection, SODIS.

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](http://www.sodis.ch)**

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**In  
6 hours  
drinking water**

## Solar Water Disinfection

### A Water Treatment Process Used at Household Level

