

# Solar Water Disinfection SODIS eawag aquatic research ooo

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## SODIS

SODIS is a method promoted by Eawag/Sandec to improve water quality at household level through solar radiation and thereby improving living conditions of people suffering from biologically contaminated water

## Issues

- 1 billion people do not have access to improved water supply, many more lack safe drinking water (~5.3 billion people)
- 4000 children die every day of diarrhoea due to unsafe drinking water

## Method



## Research & Results

### Microorganisms:

Pathogen	Illness	Reduction through SODIS (6h, 40°C)
<b>Bacteria</b>		
E. coli	Indicator for Water Quality & Enteritis	[1] [2] [3]
Y. enterocolitica	Diarrhoea	[1]
C. jejuni	Diarrhoea	[1]
S. typhi	Typhoid	> 99.999%
S. enteritidis	Typhoid	[2]
S. typhimurium	Typhoid	[2]
Sh. flexneri	Dysentery	[3]
V. cholerae	Cholera	[3]
<b>Viruses</b>		
Rotavirus	Diarrhoea, Dysentery	99.9 - 99.99% [4]
Polio Virus	Polio	99.9 - 99.99%
Hepatitis Virus	Hepatitis	Reports of cases of SODIS users
<b>Protozoa</b>		
Giardia spp.	Giardiasis	Cysts rendered noninfective [5]
Cryptosporidium spp.	Cryptosporidiosis	Cysts rendered noninfective only after >10h exposure [5]
Amoeba spp.	Amoebiasis	1h above 50°C inactivates cysts [6]

- synergistic effects of temperature and UV-radiation [4]
- effects of irradiation on cellular level, ongoing research [7]
- social factors influencing the adoption of SODIS [8]

E. coli	Escherichia coli
C. jejuni	Campylobacter jejuni
S. enteritidis	Salmonella enteritidis
S. typhi	Salmonella typhi
S. typhimurium	Salmonella typhimurium
Sh. flexneri	Shigella flexneri
V. cholerae	Vibrio cholerae
Y. enterocolitica	Yersinia enterocolitica
DEHA	di(2-ethylhexyl)adipate
DEHP	di(2-ethylhexyl)phthalate



### Material (PET):

- concentration of DEHA and DEHP after exposure below WHO guideline value [9] [10]

## Promotion of SODIS

### Training of users

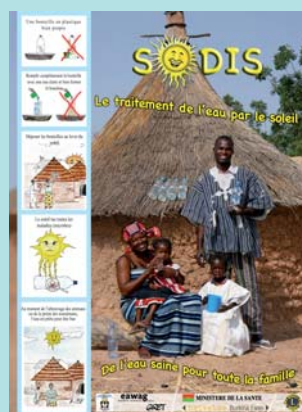
- training through promoters (health workers, NGO staff, community volunteers)
- awareness building through participatory methods
- locally adapted training materials (posters, flyers, calendars)
- training during group & community gatherings
- regular household visits (1x/month during 12 months)
- promotion through schools

### Information campaign

- promotion through mass media
- public exhibitions and demonstrations (health centers)
- street plays, songs, puppet plays
- public display of posters and prompts

### Advocacy & Networking

- involving and convincing opinion leaders
- exchanges with local authorities
- involve stakeholders (NGO's, health, education & water supply sector)
- health impact & water quality tests



## Impact of SODIS

- reduction of diarrhoea up to 40% [11] and protection in case of cholera and typhoid epidemics [12]
- high social acceptance, ranging from 20% to 80% [13]
- contributes to achieving the MDGs: over 4 million people in 30 countries are using SODIS worldwide [13]



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