



### Prerequisite hygiene conditions for SODIS

- ◆ Wash hands with soap
  - > after using the toilet
  - > before cooking and eating
- ◆ Keep your water sources clean and avoid water contamination
- ◆ Dispose excreta and household waste properly and away from water
- ◆ Don't let garbage accumulate around your area. Collect and dispose at the community garbage bin



2011

September							October						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3								1
4	5	6	7	8	9	10	2	3	4	5	6	7	8
11	12	13	14	15	16	17	9	10	11	12	13	14	15
18	19	20	21	22	23	24	16	17	18	19	20	21	22
25	26	27	28	29	30		23	24	25	26	27	28	29
							30	31					

November							December						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4				1	2	3	
6	7	8	9	10	11	12	4	5	6	7	8	9	10
13	14	15	16	17	18	19	11	12	13	14	15	16	17
20	21	22	23	24	25	26	18	19	20	21	22	23	24
27	28	29	30				25	26	27	28	29	30	31



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## People speak...

"Old age, came to me with so many physical ailments. I had frequent body aches and stomach problems, ranging from gastric to indigestion. May be it was the contaminated water that I drank from the bore well. To make matters worse, I could not afford proper medicines due to financial constraints.

Life would have continued like this, had I not been exposed to the benefits of SODIS. It was the members of ISARD, an NGO, who introduced my family, my fellow slum dwellers and me to the importance of clean drinking water and the SODIS solution.

I use SODIS regularly now and have seen a remarkable improvement in my health. Most of my friends and neighbours have followed suit and are now regular users of SODIS. We have seen the power of the sun".

*As narrated by Dhanpatti from New Amar Singh Colony, Karkardooma, New Delhi.*

## Project

Development Alternatives is promoting and disseminating point-of-use water treatment methods at household levels with emphasis on improving general hygiene practices amongst the final beneficiaries. The pilot project is being conducted in 15 slums in Delhi, covering nearly 10,000 households with a vision to enable access to **safe drinking water for all** through SODIS, thereby reducing child mortality and morbidity rates.

SODIS was developed and tested at the Swiss Federal Institute of Aquatic Science and Technology (Eawag). This treatment method is being surveyed, implemented and advocated in Delhi, India by The Development Alternatives Group and partners.

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### Implementation partners:



### Supporting partners:



Website: www.eawag.ch

Website: www.sodis.ch



Safe drinking water for all.

## SOLAR SOLUTION... For clean drinking water

"NO SINGLE MEASURE WOULD DO MORE TO REDUCE DISEASE AND SAVE LIVES IN THE DEVELOPING WORLD THAN BRINGING SAFE WATER AND ADEQUATE SANITATION TO ALL."

- UN Former Secretary-General Kofi Annan (Millennium Report)



Partner organisation:



### Enhancing the efficiency of SODIS

- ◆ Use water with low turbidity
- ◆ Use clear transparent PET bottles
- ◆ Place the bottles horizontally on a sun-reflecting surface. E.g. aluminium sheet
- ◆ Aerate 3/4th filled bottles by shaking before filling them completely
- ◆ Ensure no shadow falls on bottles during exposure
- ◆ Replace bottles after every six months (if used daily)
- ◆ Do not use scratched or dented bottles
- ◆ Keep rotating the direction of bottle every few hours so as to get the maximum sunlight

*“Solar disinfection is an example of another measure with proven health impact that requires little capital investment on the part of end-users, and is thus appropriate for the very poor.”*

- World Health Organisation

2011	
May	June
S M T W T F S	S M T W T F S
1 2 3 4 5 6 7	1 2 3 4
8 9 10 11 12 13 14	5 6 7 8 9 10 11
15 16 17 18 19 20 21	12 13 14 15 16 17 18
22 23 24 25 26 27 28	19 20 21 22 23 24 25
29 30 31	26 27 28 29 30
July	August
S M T W T F S	S M T W T F S
1 2	1 2 3 4 5 6
3 4 5 6 7 8 9	7 8 9 10 11 12 13
10 11 12 13 14 15 16	14 15 16 17 18 19 20
17 18 19 20 21 22 23	21 22 23 24 25 26 27
24 25 26 27 28 29 30	28 29 30 31
31	

## Health benefits

Research has shown that the disinfection process of pathogenic bacteria (E. coli, Vibrio cholerae, Salmonella typhi, Shigella flexneri) and virus (Rotavirus and Polio virus) by SODIS shows an efficiency of 99.9%, in normal conditions\*.

BACTERIA	Illness	Reduction through SODIS
E.Coli	Indicator for water quality and enteritis	> 99.99%
Vibrio Cholera	Cholera	> 99.99%
Salmonella typhi	Typhoid	> 99.99%
Campylobacter Jejuni	Diarrhoea	>99.99%
Shigella flexneri	Dysentery	> 99.99%
VIRUSES		
Rotavirus	Diarrhoea and Dysentery	99.9 – 99.99%
Polio Virus	Polio	99.9 – 99.99%
Hepatitis Virus	Hepatitis	Reduction of cases in SODIS users
PROTOZOA		
Giardia spp.	Giardiasis	Cysts rendered non-infective
Cryptosporidium spp.	Cryptosporidiasis	Cysts rendered non-infective only after > 10 hrs exposure

\* Source: Solar water Disinfection by Tobler M., Wegelin M., Luzi S., Cavin V., Meierhofer R.

## How can you purify your water?

1. Wash PET plastic bottles well before using it for the first time.
2. Fill the bottle with clear drinking water and close the lid well.



3. Put them in the sun on an aluminium sheet for six hours under a clear sky (and for 2 consecutive days under cloudy conditions).
4. You now have clean water for drinking.



### The advantages of using PET bottles for SODIS

- ◆ Low cost and easily available
- ◆ Transparent
- ◆ Chemically stable
- ◆ Low weight
- ◆ Neutral in taste
- ◆ Unbreakable



NO health risk in using PET bottles for SODIS, since the photoproducts are produced only on the outer surface of the bottles

*“A study by IIT Chennai on leaching of photoproducts in PET bottles certifies that correct application of SODIS method has no health risks for human beings”*

## Safe water saves lives

Sometimes the very water that life springs from is the one to take it away. Contaminated water is dangerous. 70-80% of infant deaths in India are due to water-related diseases.

## Did you know?

- ◆ About 40% of the people in Delhi do not have access to safe drinking water<sup>1</sup>
- ◆ 20.3% of deaths among children under five years in India are due to diarrhoeal diseases as against the global figure of 17%.<sup>2</sup>
- ◆ The health burden of poor water quality is estimated 27 billion rupees a year in India<sup>3</sup>

## What is SODIS?

Solar disinfection (SODIS) – A simple low cost disinfection method that you can apply yourself, using the rays of the sun to make water safe for drinking.

## How does it work?

SODIS uses sunlight to kill bacteria in water. The UV-A rays in sunlight or solar radiation kill germs such as viruses, bacteria and parasites in just six hours.



### Advantages of SODIS technology

- ◆ A household level water treatment system
- ◆ Easy to apply
- ◆ Reduces incidents of water borne diseases and epidemics
- ◆ Lowers mortality and morbidity rates
- ◆ Doesn't change the taste of water
- ◆ Relies on local resources and renewable energy - environment friendly
- ◆ Replicable with low investment cost

*“The jury considers SODIS an impressive way of contributing by the simplest means to making water supplies better and safer, thereby reducing diarrhoea and other diseases like it, and mortality in developing countries.”*  
- Red Cross(2006)

1 Study by Center for Civil Society, Tomorrow's Crises Today - Chapter 2  
2 WHO, 2000  
3 Water Aid Drinking Water Quality in Rural India (2008)