

IPRO 325B

Designing Affordable and Sustainable Water Solutions for the World's Rural Poor

Robert Christo
Angela Gandhi
Katrina Ongchangco
Reema Paranthan
Tomomi Tsukioka
Suk Hwan Yun



The Problem:

Water-borne diseases are a world-wide pandemic; every year more than five million human beings die from illnesses acquired from unsafe drinking water.



The Team:



Reema Paranthan

5th Year Architecture
Subgroup Leader

Robert Christo

4th Year Architecture
Subgroup Meeting Minutes

Angela Gandhi

4th Year Psychology
Multicultural Liason

Suk Hwan Yun

3rd Year Chemical Engineering
Engineering Notebook

Tomomi Tsukioka

5th Year Architecture
Team Leader

Katrina Ongchangco

4th Year Architecture
Meeting Minutes

Goals & Progress:

IMPROVE-previous semester's water filtration system

- Constructed prototypes
- Tested different types of sand for filter media
- Collected sample of filtered water
- Checked turbidity of samples

APPLY- system to a poor rural area

- Researched cultural conditions
- Researched daily drinking water conditions

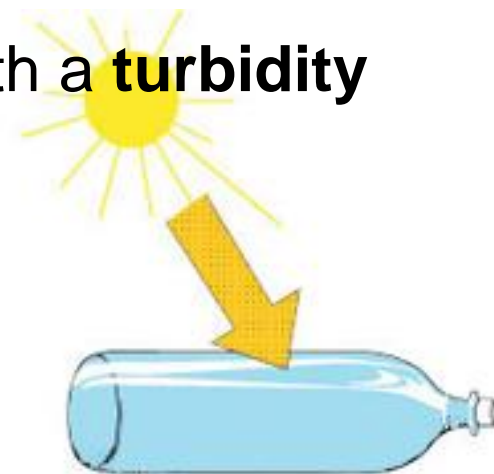
INFORM-the local people

- Create manuals
- Construction workshops



SODIS(Solar Water Disinfection)

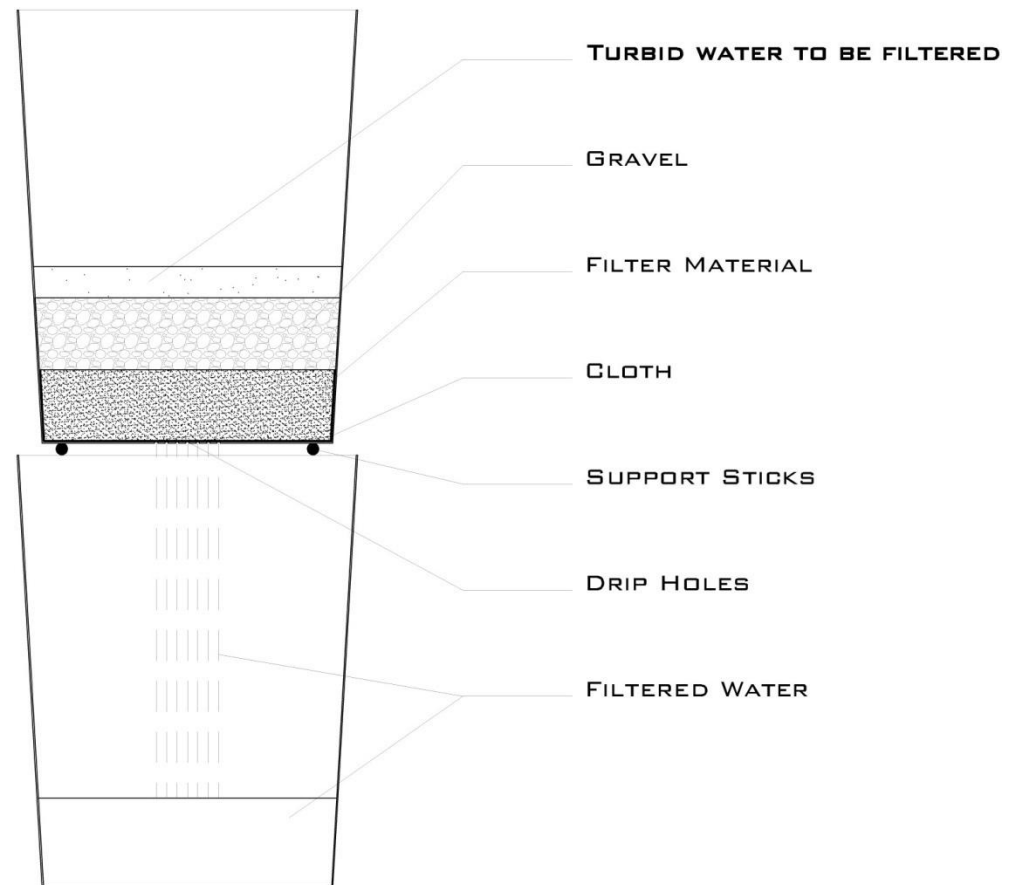
- Improves biological quality of water by solar UV-A **Radiation** in the spectrum of **UV-A** (wavelength 320-400nm) and **increased water temperature** to inactivate pathogens causing diarrhea
- SODIS requires relatively **clear water** with a **turbidity less than 30 NTU**.



Inactivation of microorganisms by UV-A-radiation and thermal treatment

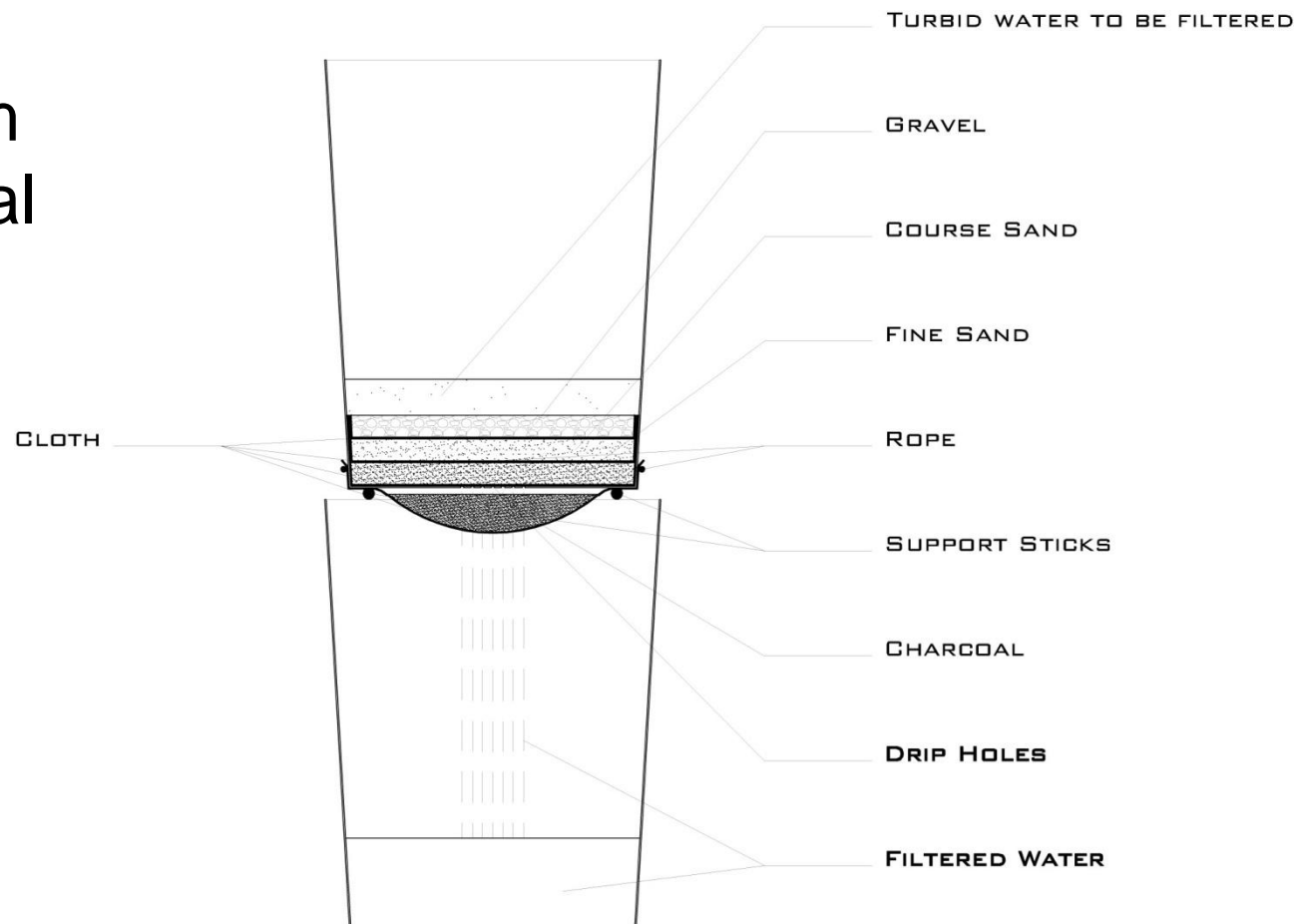
Major Obstacles:

- Lack of legible and consistent data
- Retesting old system and materials
- Timing (particularly after multiple uses)
- Cloth placement allows turbid water to leak through



Resolution:

- Retest old system and sand/charcoal ratios
- Reconsider old design
- Test new designs



Anticipated Challenges

Enhance the ability of reducing turbidity

- Size of particle of medium
- Size of pore of cloth

Material conservation for the rural poor

- Dirty sand makes draining slow
- Ability of absorption of charcoal is decreased continuously

Disinfection

- Testing disinfection on two-bucket filtration system

QUESTIONS??

