

# IPRO 325B

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

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## 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

5<sup>th</sup> Year Architecture  
Subgroup Leader

## Robert Christo

4<sup>th</sup> Year Architecture  
Subgroup Meeting Minutes

## Angela Gandhi

4<sup>th</sup> Year Psychology  
Multicultural Liason

## Suk Hwan Yun

3<sup>rd</sup> Year Chemical Engineering  
Engineering Notebook

## Tomomi Tsukioka

5<sup>th</sup> Year Architecture  
Team Leader

## Katrina Ongchangco

4<sup>th</sup> 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

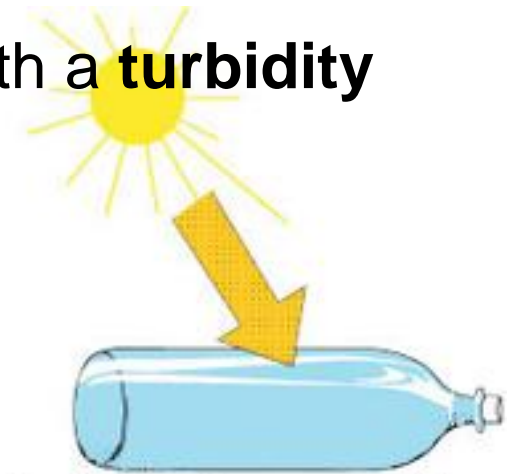
### INFORM-the local people

- Create manuals
- Construction workshops



## SODIS( Solar Water Disinfection)

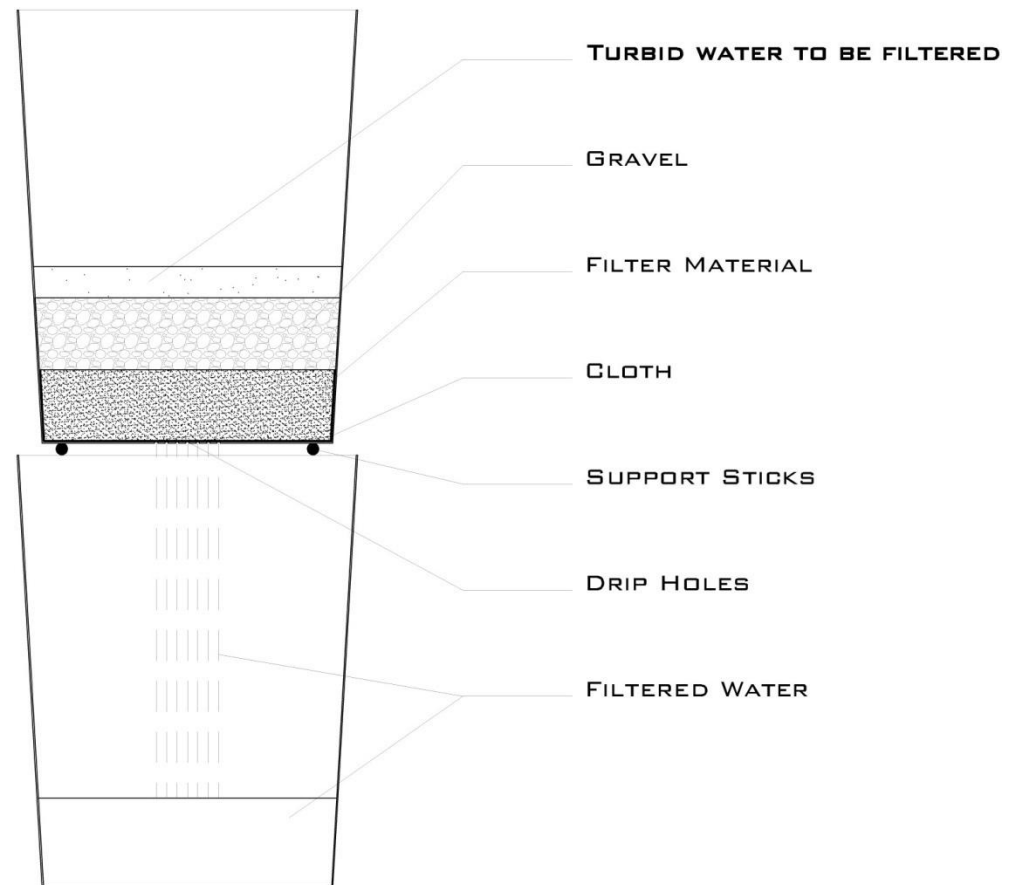
- Improves biological quality of water by solar UV-A **Radiation** in the spectrum of **UV-A** (wavelength 320-400nm) and **increased water temperature** to inactivate pathogens causing diarrhea
- SODIS requires relatively **clear water** with a **turbidity less than 30 NTU**.



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

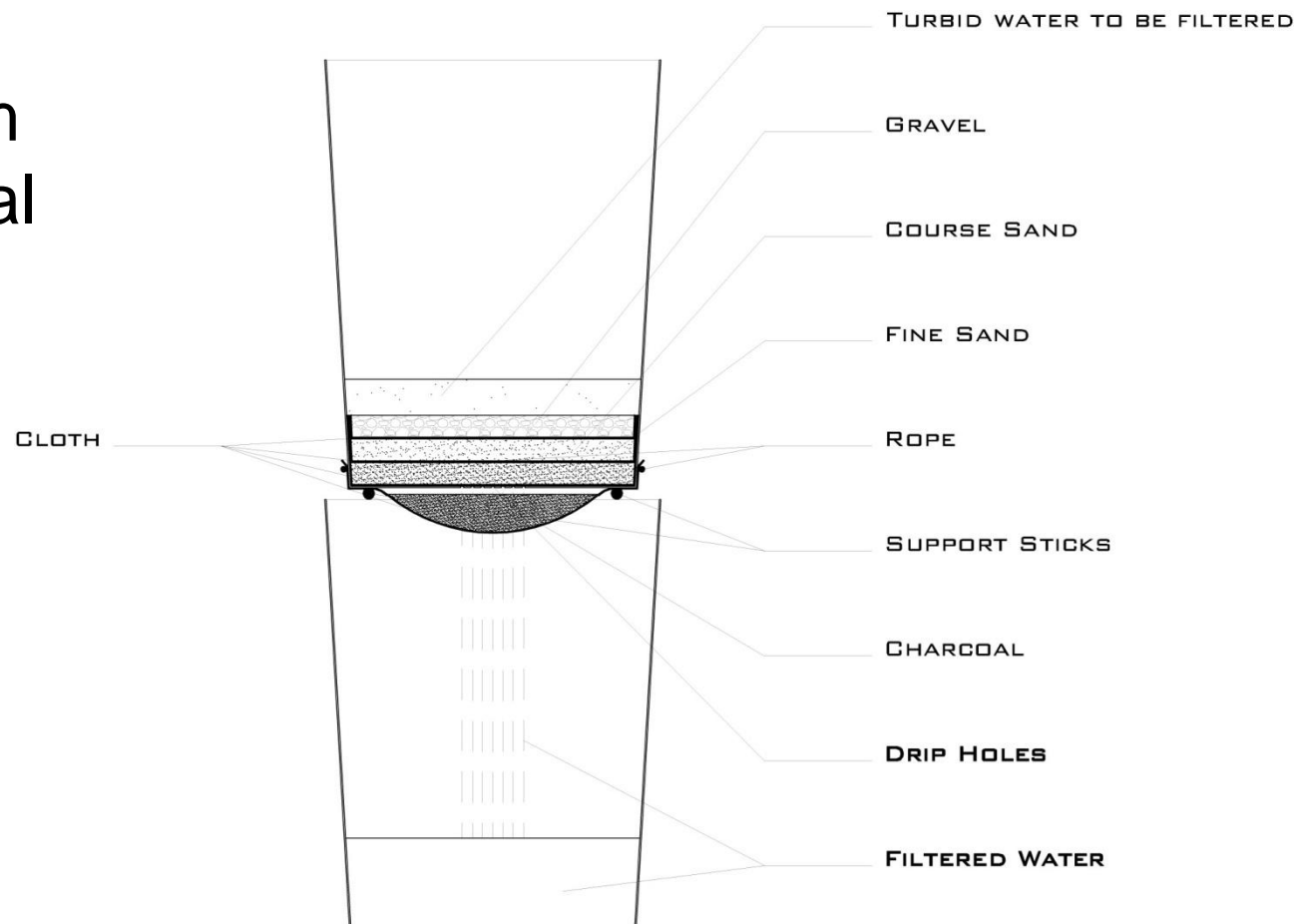
## Major Obstacles:

- 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??

