

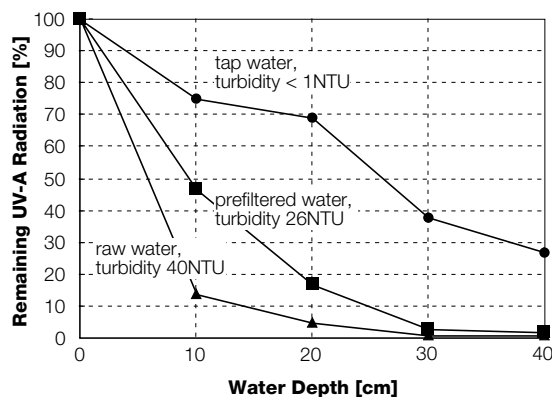
SUMMARY

Radiation intensity is reduced by increasing turbidity and water depth. Raw water of low turbidity (< 30 NTU) should be used for SODIS. Similarly, the water depth should be small and not exceed 10 cm in order to allow sufficient radiation of the water.

BACKGROUND INFORMATION

Water Turbidity

Turbidity is used as a parameter to characterise the optical properties of liquids containing absorbers and scatterers; i.e. suspended particles. As shown in Figure 1, high turbidity substantially reduces the light penetration in water and therefore reduces the disinfection efficiency of the SODIS treatment process. To ensure safe water disinfection, the raw water should have a low turbidity (less than 30 NTU=Nephelometric Turbidity Units).



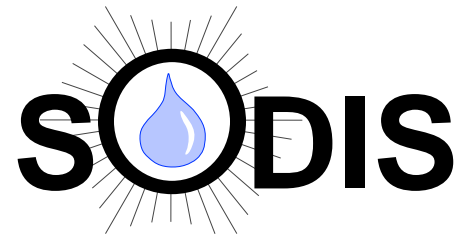
Water depth

UV-radiation is reduced by increasing water depth. At a water depth of 10 cm and moderate turbidity level of 26 NTU, UV-A radiation is reduced to 50%. The black lower surface of SODIS bags and bottles induces a temperature gradient which causes the water to circulate within the container thereby improving the inactivation efficiency. In any case, containers used for SODIS should be as flat as possible, with a water depth less than 10 cm.

Water Turbidity Test

To decide whether the water needs filtering, place the filled bottle on the SODIS Logo (see Figure below) on top of a table in the shade (to avoid light interference) and look through the bottle from top to bottom. If you can read the letters through the water, water turbidity is less than 30 NTU. If you can still see the sun rays of the Logo, turbidity is less than 20 NTU.

If water turbidity is higher than 30 NTU, coarse and settleable solids can be separated by storing the raw



SODIS Logo for Turbidity Test. If one can read the letters, the turbidity is less than 30 NTU. If one can see the sun rays of the Logo, turbidity is less than 20 NTU.

water for one day, and turbidity can be reduced possibly by flocculation / sedimentation (using alum sulphate or crushed Moringa oleifera seeds) or by filtration.

REFERENCES

Wegelin, M. et al. (1994). Solar water disinfection: scope of the process and analysis of radiation experiments. *J Water SRT-Aqua*, 1994, **43**, No. 3, 154-169. [P1]
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