

Solar UV Disinfection of Waterborne Pathogens in Drinking Water for use in Developing Countries or in the Aftermath of Humanitarian Crises

Kevin G McGuigan

Dept. of Physiology & Medical Physics, The Royal College of Surgeons in Ireland, 123 St. Stephen's Green, Dublin 2, Ireland.

kmcguigan@rcsi.ie

In Sub-Saharan Africa ~800,000 children (~ 2 Asian Tsunami) under 5 years of age, died annually from diarrhoeal diseases in 2000-2003. Solar Disinfection (SODIS) is a technique for making contaminated drinking water safe where transparent bottles are filled with contaminated water and placed in direct sunlight for 6 hours. SODIS reduces fecal contamination levels from 1 million bacteria per ml to zero in < 1.5 hours and is completely effective against the pathogens responsible for cholera, dysentery, typhoid, salmonella, gastroenteritis, cryptosporidiosis, giardiasis and polio. The only clinical trial to-date showed that children under 5 years using SODIS were 7-times less likely to contract cholera than children who had not. The WHO approved SODIS in Jan 2005 after the Asian Tsunami however many relief organisations remain reluctant to promote the technique. They see a need for further Health Impact Assessments in other regions before promoting the technique. The aim of this research is to prove that SODIS of drinking water is an effective intervention against a range of waterborne diarrhoeal diseases at household level and as emergency relief in the aftermath of natural or man-made disasters. Health Impact Studies are currently underway in Cambodia, S. Africa, Zimbabwe and Kenya In addition we are investigating new enhancement technologies which will either extend the effectiveness of the technique or simplify the protocols being used at household level.