

## **For Flood Affected Populations: Purifying Water ---- With Sun Light!**

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There are some 4 billion cases of diarrhea each year and about 2 million deaths, mainly of children under 5, according to WHO. The problem is particularly serious after floods, such as in Pakistan, where the break-out of diarrhea has been reported from several regions. Can science offer a cheap and affordable way to make the dirty water available safe for drinking? The answer is yes. The technology known as “SODIS” (Solar Water Disinfection) requires only one liter transparent plastic (PET) bottles and sunlight! These bottles allow the UV light to pass through, killing the germs and making the water drinkable. If the water is muddy, it should be filtered through a piece of cloth in order to remove the dirt particles. The bottle is placed for a minimum of 6 hours in sunlight and the water can then be drunk directly from it. The bottles must not be old or heavily scratched in order to allow the light to pass through unobstructed.<sup>1</sup>

This easy way of purifying water was discovered by Prof. Atfim Acra at the American University of Beirut in the 1980s. The Swiss Federal Institute of Aquatic Science and Technology (Eawag) in collaboration with the Department of Water and Sanitation in Developing Countries (Sandec), has already implemented projects in 33 countries including Bhutan, Bolivia, Burkina, Faso, Cambodia, Cameroon, DR Congo, Ecuador, El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Honduras, India, Indonesia, Kenya, Laos, Malawi, Mozambique, Nepal, Nicaragua, Pakistan, Peru, Philippines, Senegal, Sierra Leone, Sri Lanka, Togo, Uganda, Uzbekistan, Vietnam, Zambia and Zimbabwe. The Clinical control trials demonstrating the efficacy of the process were carried out by Professor Ranon Conroy of the Royal College of Surgeons in Ireland, in collaboration with the Michael Elmore-Meegan before it was recommended by WHO as a safe method for water treatment.

The Government of Pakistan agencies and NGOs involved in aid distribution should distribute clean PET bottles with the instruction pamphlets so that the flood affected persons could save themselves from diarrhea diseases.

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<sup>1</sup> The disinfection process involves three different mechanisms. Firstly the solar radiation (UV-A) attacks the bacteria directly, killing them by interfering with their metabolic processes. Secondly the UV-A radiation reacts with the oxygen dissolved in water, producing highly reactive oxygen species and peroxides that kill bacteria. Thirdly the infra-red light heats up the water, and if the temperature rises above 50 degrees Centigrade, then there is a three-fold increase in the rate of disinfection