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Sari-sun combo can sterilise dirty water

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Bangalore, Feb 8 (IANS) Ladies, don't throw your torn or used saris, because scientists have found excellent use for them.

An Indian study has shown that even dirty water gets sterilised and becomes drinkable after it is filtered through a folded cotton sari and then exposed to sunlight for less than an hour.

Cloth filtration is already a common practice in rural areas, especially when water becomes turbid during the rainy season. What scientists have now shown is that the sari-filtered water exposed to sunlight gets sterilised and becomes fit to drink without any need for boiling.

This simple technology for getting safe drinking water has been demonstrated by Nandini Nimbkar and Anil Rajvanshi of Nimbkar Agricultural Research Institute (NARI), a non-profit institution in Phaltan, Maharashtra, in western India. They have reported their work in the upcoming issue of the journal Current Science.

As the water treatment technologies currently available for homes are fairly costly and not sustainable, the combination of sari filter and solar heating can be used effectively -- especially by people in rural areas -- for sterilising the water they usually obtain from streams or draw wells, says the duo.

Disinfection of water may be accomplished by chemical treatment like chlorination or by boiling the water. Chlorination may alter the taste and have side-effects, while raising the water to boiling may not always be possible with sunlight and would require electricity or some other fuel.

NARI scientists have shown that disinfection could be achieved even at sub-boiling temperatures as low as 55 degrees Celsius that can be reached using solar energy.

To demonstrate their technique, the scientists used raw water taken from a canal and passed it through a four-layered cotton sari-cloth. The water filtered through the tiny pores in the sari was then heated to different temperatures ranging from 50 to 60 degrees Celsius and analysed for coliform bacterial content. Coliform bacteria that are present in large quantities in human excreta are good indicator organisms for the presence of disease-causing bacteria.

Their experimental data showed that sari filtration alone -- besides filtering particulate matter -- significantly reduced the coliform count in the raw water. Heating the filtered water to 60 degrees Celsius and maintaining this temperature for 15 minutes completely eliminated the coliform population. At 55 degrees Celsius it required 45 minutes for the water to become bacteria free.

These heating conditions for water using sunlight can be achieved even on a partially cloudy day, the scientists claim. There is even no need to use a thermometer as one can guess the water temperature by feeling with the hand, says Rajvanshi. "At 50 degrees Celsius one can keep the hand immersed in the water for up to 10 seconds without getting singed, and at 60 degrees Celsius one cannot keep the hand in water for more than five seconds."

Thus, a combination of sari filter and solar heating "is an effective, feasible and environmentally sustainable technique of disinfection to obtain clean drinking water", the researchers conclude.

(K.S. Jayaraman can be contacted at killugudi@hotmail.com)

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