

## “NEERI-Zar” Portable Instant Water Filter



NEERI-Zar' is the water purification system suitable for potable water supply particularly under emergency situation with a wide range of flood water quality. It is suitable for rural or remote locations during emergency situations like floods, heavy rainfall, or cyclones and have no electric supply and do not have potable water to drink. A typical unit, with two 100 L vessels, can serve about 20-30 persons, when operated for 10 hours a day, on the basis of 6-10 litres per capita/day for drinking and cooking purposes. NEERI-ZAR brings down the turbidity of filtered water to less than 3 NTU from raw water in the range 100-300 NTU. The operation of the unit includes disinfection by chemical agent.

The unit was tested in NEERI for the treatment of raw water spiked with turbidity, bacterial and zooplankton. The results indicate that the unit produces filtered water with a turbidity in the range 1.1 to 2.8 NTU from the raw water with the turbidity in the range 14 - 300 NTU. Total coliform and E.Coli counts in the raw water were in the range 6800 - 78300 CFU/100 ml and 100 - 7900 CFU/100 ml respectively, which is usual range for surface water sources or flood waters. The respective counts in the filtered water were 80 - 7900 CFU/100 ml and ND - 150 CFU/100 ml indicating 90 - 99% reduction in bacterial load. After disinfection total coliforms and E.Coli counts were nil in the treated water samples. Zooplankton species like Cyclops, Nauplius,

**Daphnia, Branchionus are also removed during filtration. However, the unit cannot be used for treatment of brackish water.**

**The novel features of the present invention are:**

- **Simple to fabricate**
- **Easy to operate**
- **Minimum maintenance**
- **Light weight**
- **Ease in transportation and installation**
- **Most Reliable for emergency water supply**
- **Gravity operated**
- **No power requirement**
- **Typical Capacity - 20 L/h.**



**otherwise sandy and water starved district, into natural lakes all over but with not a drop of potable water. On request from the Collector of Barmer District (Rajasthan), NEERI has installed 100 units in the flood affected remote areas of Barmer District in October 2006 to convert the turbid and contaminated rainwater into potable water. Performance of these units under field conditions was evaluated and the opinion of**

**Usefulness of NEERI-ZAR water filter was proved during the floods in the Barmer district of Rajasthan. The Barmer District in Rajasthan State, where people walk few kilometers to fetch drinking water was ravaged by excessive rains in the last week of August 2006. Over 750 mm of rains in a week converted many villages, in this**



the local people was recorded. People using treated water from these units were very happy with the quality of water produced by NEERI-ZAR units. They expressed their gratitude for timely help provided by NEERI team for the supply of potable water at the time when all their water sources were either destroyed or contaminated due to flood; even tanker water supply was not available due to non approachability of the villages.



NEERI team has been awarded the Nina Saxena Excellence in Technology Award, 2008 instituted by IIT Kharagpur for the development of "NEERI-ZAR" . This award is in the form of a plaque and a cash award of Rs.51,000/-. This award was handed over on 18th August, 2008 on the Foundation Day ceremony of IIT Kharagpur.

**NEERI has submitted a patent application for the portable instant water filter "NEERI-Zar "**

**As the technology was developed for societal need, it is proposed to make available this technology free to everybody who wants to use for societal venture. The interested person may contact the Scientist on the following address for design details and terms and conditions for use this technology.**

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