CHAPTER - VI

6.0 A SIMPLE HOUSEHOLD FILTER TO REMOVE TOXIC ARSENIC FROM POTABLE WATER SAMPLES

In India, purified water is not available in many rural villages. In many villages in Tamil Nadu and West Bengal rural people depend on ground water sources to meet their water need. Ground water is taken out through bore wells. Ground water is polluted by many pollutants like toxic metals, pesticides etc. in many parts of India, drinking water sources in many villages is contaminated with a variety of chemicals of which fluoride and Arsenics are common. Water contaminated with fluoride and Arsenic cause many health problems.

In rural village people cannot afford to install sophisticated water purifier to remove arsenic. Hence if some indigenous technologies are developed, it will be a great boon to thousands of poor villagers who are use arsenic contaminated water innocently. So in the present study a novel method of removing arsenic in drinking water is tried. For the removal of such contaminant earthen pots with earthenware pieces and naturally occurring material are used.

6.1 MATERIALS AND METHODS

To test the efficacy of earthen pots to remove arsenic in drinking water, earthen pots were used. To carry out the study two earthen pots of uniform capacity (3 liters) were developed at Karukurichi potters society. The discs were piled one above the other. The used filter type is shown in figs.6.1. The top pot filled with 3 liters of arsenic solutions containing 0.25 mg/L concentration. The water could flow slowly from the hole in the bottom of the pot. Finally, filtered water was collected and time interval was also noted. For the experiments few modifications were made in the usage of discs. That is, the disc was to be made with activated *Clerodendrum inerme* was kept as well.
Fig. 6.1A A simple household filter
6.2 EXPERIMENT

Before passing arsenic contained water, 3 liters of tap water was passed through each pot to flush out materials that might have become dislodged with the water flow, ending up in the resulting water. Then 3 liters of arsenic contained water was allowed to pass through the filter system containing two discs. For arsenic removal two separate sets of experiments were conducted. Arsenic content in the water before introduction into the pot system and in the filtered water at last compartment was estimated. For testing arsenic ICP-MS spectrometer was used.

6.3 RESULTS AND DISCUSSION

To provide safe drinking water to the rural villages, a cheap method of water purification is developed by using earthenware storage chamber. The earthen pots and the ingredients added inside are cheap plant products. This filtering unit does not require energy/power. This is a natural method of water purification to save the life of several thousand villagers who suffer with arsenicosis. Several experiments were conducted to find out the efficacy of the systems.

The amount of arsenic before the filtration was 0.25mg/L. It was reduced to 0.00875 mg/L. This value is lower than desirable limit of Arsenic. These earthen pots made with activated Clerodendrum inerme functions as a very effective agent to absorb the toxic arsenic.