



## Participatory role in rural water treatment

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NEARLY 80 PER CENT of Sri Lankan population belongs to the rural sector. In most instances groundwater is utilized as the drinking water source in the form of ordinary shallow wells, deep wells and tube wells. Most of the groundwater sources have high mineral contents such as iron and fluoride due to the hydrogeological features and these need rectification. Considerable number of consumers belong to either the category of low income or to the less privileged group with poor educational background. In consideration with the said social factors an appropriate village level treatment mechanism is necessary.

### Iron removal plants (IRPs)

For iron rich water, iron removal plants were constructed at village level in 1985 to 1989. Consumer societies were formed consisting of 20 families per unit. During and after construction of such village level plants, the consumer societies were given on the job training on O&M of filter units. Thereafter, it was the responsibility of the consumer society to maintain and operate these units without any outside assistance. 30 IRPs were randomly selected for this survey, out of a total of 250 IRPs constructed at Kandy District. The present survey reveals that 70 percent of the consumer societies are actively involved in maintaining the IRPS, the balance 30 percent being inactive. The participatory role of the consumers has helped themselves to operate the iron removal plants successfully for the last 07 - 10 years as given in Table 1. 63.4 percent of the IRPs are in good working order due to the participatory role played by the women even after 7 - 10 years in operation. The rural women capabilities would have shown much higher percentage if not for the 10 percent breakdown of the pumps which have not been repaired even after lapse of one year. The strategy is to strengthen the maintenance of the pumps at village level to sustain the rural water treatment.

### Domestic defluoridators

Presently 650 domestic low cost defluoridators are in operation in 40 villages in Sri Lanka and out of which nearly 150 of them are in operation for more than 03 years. Guidance was given with regard to operation and maintenance procedures by conducting house hold basis awareness programmes, while installing the filters. Obtaining the filter medium, broken piece of freshly bunt bricks was the responsibility of the each house holder. A strong message was conveyed to the mothers that the benefit of proper defluoridation will benefit their off springs. The

**Table 1. Condition of the IRPs**

Description	Percentages
Working in good condition	63.4
IRP broken	13.3
IRP by passed and used directly	13.3
Pumps out of order	10.0
(Source Failure)	

fluoride level of the wells were measured and made known to the beneficiaries thus achieving the "reaching the out reached". The fluoride level of the wells ranges from 1-5 mg/l. It is important to change the filter medium at appropriate time intervals in order to get defluoridated water in the range 0.5 to 0.8 mg/l. It was much easier to handle defluoridation because these units were given to individual households. The participatory role to be played by the housewives was further stressed through the family health workers who have intimate knowledge of the families in the village.

The criteria adopted in collecting field data to study the community perception regarding defluoridation was by conducting interviews with household beneficiaries, community based organisations, primary school teachers and family health workers. This data was for the qualitative assessment. For quantitative assessment data was collected from beneficiaries with questionnaires using random sampling.

Though the defluoridators have been distributed among the community groups with young children of the age group 1-10 years, it is important to see whether the defluoridated water is used for drinking and cooking purposes in order to achieve the desired objective of having clean white teeth for the younger generation.

On the other hand proper changing of the filter medium at the recommended time period is also important. The Table 2 gives the co-relation of the above mentioned factors.

**Table 2. Usage of defluoridators**

Usage of defluoridated water	Percentage
Drinking and cooking	78.1
Drinking only	21.9

**Table 3. Usage pattern co-related to income**

Monthly income in Rupees (US \$ = Rs. 57)	Group percentage	Usage pattern as percentage	
		Drinking and cooking	Drinking only
1001 - 2000	34.4	72.7	27.3
2001 - 3000	15.6	100.0	-
3001 - 4000	15.6	80.0	20.0
4001 - 5000	15.6	100.0	-
> 5001	18.8	50.0	50.0
	100.0	78.1	21.9

The level of household income has some relationship with the usage pattern, that is where the income is high, usage of defluoridated water for the correct purpose is also less. 50 percent in this group has used the defluoridators for correct purpose as shown in table 3, column 4. In the low income group drawing less than Rs. 2000/- per month 27.3 percent used defluoridated water for drinking only. This shows that the families who have comparatively high income might have other priorities in life than giving weightage on defluoridation.

The type of houses was correlated with the usage pattern as shown in table 4. The daub and wattle houses are meant to be in the temporary category and only 70.6 percent has used these units for drinking and cooking. 77.8 percent in the permanent category used the defluoridated water for cooking and drinking. When usage pattern was correlated to the education level it was found that those who had secondary education used the defluoridation well for the correct purpose as shown in table 5.

### Conclusions

- Awareness programme is an important tool in rural water treatment and is more effective with the involvement of mothers.
- Monitoring and evaluation is another step in achieving sustainability for community based programmes with primary educated, low income groups.

- Some level of subsidy is essential for the low income groups in order to encourage the usage of defluoridators.
- 78.1 percent of the community has accepted the defluoridation as a important household work.

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**Table 4. Usage pattern co-related to types of houses**

House type	Group percentage	Usage pattern as percentage	
		Drinking and cooking	Drinking only
Temporary	53.1	70.6	29.4
Semi Permanent	18.8	100.0	-
Permanent	28.1	77.8	22.2
	100.0	78.1	21.9

**Table 5. Usage pattern co-related to education**

<i>House type</i>	<i>Group percentage</i>	<i>Usage pattern as percentage</i>	
		<i>Drinking and cooking</i>	<i>Drinking only</i>
Secondary Education			
Grade 11-13	43.7	71.4	28.6
Grade 10-5	50.0	87.5	12.5
Primary Education			
Grade 1-5	6.3	50.0	50.0
	<b>100.3</b>	<b>78.1</b>	<b>21.9</b>