

Risk Assessment and Health Based Evaluation on Rural Water Supply Schemes: Case Study in Kotiyakumbura, Mawela and Kandewaththa

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Provision of safe drinking water and sanitation facilities are cited as the highest social priority to communities. In Sri Lanka, rural water supply schemes are not subjected to substantial concern. This research was to focus on health-based evaluation on treated water from rural water supply schemes. Hazards and hazardous events were identified at the water source, treatment process, distribution system and the consumer end of three rural water supply schemes. The risk assessment was carried out following semi quantitative approach. 40% of the identified hazards were recorded as high risk. Turbidity, Electrical conductivity, pH, Temperature, Alkalinity, Hardness, Nitrate, total phosphate, Phosphate, *E. coli* and total coliform were measured in raw water, treated and water from consumer end. Residual Chlorine was measured in treated and consumer end water samples. Tested water quality parameters were within the limits of Sri Lankan Standards except the pH of treated water in *Kotiyakumbura*, turbidity of *Kandewaththa*. *Kotiyakumbura* and *Mawela* treated water is microbiologically unsatisfactory. The pH of water in *Kotiyakumbura* ranges between 5.98 and 7.40. 90% of the turbidity of water at the consumer end in *Kandewaththa* exceeds 2 Nephelometric Turbidity Unit. Questionnaire survey was done by covering the income levels, education backgrounds and location. *Kandewaththa* consumers do not use this water for drinking. Currently, none of the consumers are suffering from waterborne diseases. 82% of *Kotiyakumbura* and 78% of *Kandewaththa* consumers practice domestic water treatments such as boiling and filtering. Due to these domestic treatments they may be free from water-borne diseases currently. As a recommendation it is necessary to implement Water Safety Plans on rural water supply schemes. Further studies are required on rural water sector to improve the quality of treated water.

Keywords: Risk assessment, Hazards, Residual chlorine, Water safety plans