

### AI 07 Assessment of the effects of hospital wastes release to Nilwala river, Matara on the river water quality

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Large varieties of substances have been used for medical purposes and ultimately enter to the natural water mostly via wastewater treatment plants in hospitals. This wastewater from hospitals can be altered the water quality and biological diversity in adjacent water. The aim of this study was to assess the effects of hospital waste received from general hospital Matara to the Nilwala River. Two sampling sites were selected before the entrance of wastewater. Further, two sites are located after the entrance of wastewater and one site was at the entrance of wastewater channel. Water, sediment and plankton samples were collected once in two weeks time during February to April, 2012. Nitrate, phosphate, pH and Cu concentrations in water were significantly ( $p < 0.05$ ) higher at the hospital wastewater discharging canal. However, Cu concentration in surface water did not exceed the EU limits of 0.0005-0.112mg/l for fisheries and aquatic life and water pH did not exceed the maximum allowable limit (6-8.5) for fisheries and aquatic life in Sri Lanka. Mean value of Cu in sediment at the entrance of wastewater channel was  $0.75 \pm 0.05 \mu\text{g/g}$ . Although Total coliform concentration (MPN/100ml) did not vary significantly among the sampling sites, it was relatively low ( $39.66 \pm 17.70$ ) at the wastewater discharging canal due to presence of disinfectants in hospital wastewater. *Pediastrum simplex* was the most abundant phytoplankton species at the five sampling sites and the Cladocerans are the most abundant group of zooplankton at all sites except at the entrance of wastewater discharging canal. The relative abundance of Protozoans was higher at the wastewater discharging canal. The toxicity (72h  $EC_{50}$ ) of hospital wastes on *Pediastrum simplex* was 0.08 Toxic Units and it was not an acute toxic effect on the alga when compared with hazard classification systems for wastes discharge into the aquatic environment.

**Keywords:** hospital effluents, coliform, heavy metal, *Pediastrum simplex*, toxicity