

**THE POLLUTION SOURCES AND THE LEVEL
OF POLLUTION OF WATER IN BERUWALA
FISHERY HARBOUR IN SRI LANKA**

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ABSTRACT

Sri Lanka faces issues of coastal pollution as land and marine based pollutants are directly release into aquatic environment without any treatment. In order to assess human impacts on point source coastal pollution, this study was performed at Beruwala fishery harbour, one of the major fishery harbours in Sri Lanka. The objectives of the study was to investigate the sources that cause pollution of water in Beruwala fishery harbour and estimating levels of water pollution in Beruwala fishery harbor and canal mouth of Beruwala by comparing with the water quality at Moragalla beach and water quality standards. The water quality of three sites; the harbour where fishing vessels are anchored, the canal mouth and an open sea area, was investigated once a month over the period of 6 months from April-September 2009.

When consider the water quality data of the three sites, the values of parameters that denote normal water quality could be explained using basic rules. Temperature, salinity, conductivity and TDS were significantly low in the canal mouth, which was having fresh water in a small quantity. Both pH and oxygen values were higher in the open sea than the other two sites where they were not significantly different. The pH values of sea were high due to the presence of carbonate and oxygen amount was high due to its turbulent and unpolluted nature. The pH levels of all 3 sites were within the pH ranges given by the standards and DO contents of all 3 sites were higher in values than 3 mg l^{-1} ; the lowest permissible value.

Of the parameters measured; turbidity, nitrate, phosphate, iron, BOD, COD, oil and faecal coliform measure the status of pollution in a water body. Generally, values of these parameters were highest in harbour basin and/or the canal mouth, except COD that had highest values in the sea. Turbidity had been always higher in the harbour basin or canal mouth indicating the accumulation of wastes from fishing vessels and land based activities respectively. Nitrates concentration in the study sites did not exceed the highest acceptable level while total phosphate concentrations in the month of September in both harbour basin and canal mouth exceeded the limit (0.4 mg l^{-1}) given for fish and aquatic life by proposed standards of CEA, Sri Lanka. However, in the other months as well phosphate levels of harbour basin were closer to the upper limit of 0.4 mg l^{-1} . The highest total iron concentration at canal mouth exceeded the standard value 0.03 mg l^{-1} .

given for fish and aquatic life by proposed standards of CEA, Sri Lanka. The higher values of nitrate and phosphate at the harbour basin compared to canal mouth indicate organic pollution born at the site itself. The highest value of total iron at the canal mouth in the month of September indicates land based inorganic pollution. Since the iron level of harbour basin has increased slightly in the month of September, it seems that pollutants carried by canal influence the selected site of harbour basin a little probably due to the dilution effect. The BOD in harbour basin exceed the limit ($<4 \text{ mg l}^{-1}$) during some months and the value of 14.6 mg/l is for oil content exceeded the limit ($<10 \text{ mg l}^{-1}$) given for fish and aquatic life by proposed standards of CEA Sri Lanka. The harbour basin and the canal mouth were highly contaminated with faecal matter having more than 4000 colonies/100ml, where the standard value is 100 colonies/100ml.

Waste removal measures of fishery vessels, nearby households and industries indicate 40-75% of kitchen waste, 60% of sewage, 60-100% of waste water, 40% of oil, and 40-100% of non-degradable wastes are released directly to nearby water body. When consider these values, it is possible to deduce that organic pollution and oil pollution occur at harbour basin.