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**An assessment of water quality and pollution in Puranawella Fishery Harbour, Dondra, Sri Lanka**

K. H. H. Niroshana<sup>1</sup>, H. B. Asanthi<sup>2</sup> and P. B. T. P. Kumara<sup>1</sup>

<sup>1</sup>*Department of Oceanography and Marine Geology, University of Ruhuna, Matara, Sri Lanka.*

<sup>2</sup>*Department of Limnology, University of Ruhuna, Matara, Sri Lanka.*

Sri Lanka is a coastal nation, facing issues in coastal pollution. Over the past few decades this has increased and has become a crisis today. This study was carried out at Puranawella harbour, one of the major fishery harbours located in the southern coast, with two objectives, to assess the severity of pollution level of the harbour and to present the current status of anthropogenic activities which boost pollution. Seven sampling stations were investigated with three week intervals during the period of three months from December 2010 to February 2011. The spatial and seasonal variations of physicochemical parameters were examined and bacteriological analyses together with estimation of phytoplankton abundance were carried out, in order to attribute and indicate the level of chemical and microbiological pollution of the harbour.

In this study, conspicuous differences in the physico-chemical, bacteriological and biological parameters were observed between the basin and out of the harbor. The ranges of parameters that characterize the harbour water were found as follows; temperature between 25.4-28.2°C, pH between 7.26-8.11, salinity between 16‰-36.5‰, water transparency between 0.35-4.01m, total suspended solids between 0.015 -0.072 g l<sup>-1</sup>, total dissolved solids between 6.98 -43.79 g l<sup>-1</sup>, dissolved oxygen between 5.51-11.69 mg l<sup>-1</sup>, biological oxygen demand between 0.44 -8.08 mg l<sup>-1</sup>, chemical oxygen demand (0.78 -23.41 mg l<sup>-1</sup>), orthophosphate (0.008 -1.58 mg l<sup>-1</sup>) and Nitrite between 0.02 -1.83 mg l<sup>-1</sup> indicating a severe eutrophication in this harbour basin. Biological oxygen demand close to harbor jetty (4.46 mg l<sup>-1</sup>), exceeded the recommended value (< 4mg l<sup>-1</sup>) according to environmental quality standard by Central Environmental Authority (CEA) of Sri Lanka and primary water quality criteria of 3mg l<sup>-1</sup> for class SW-IV (for harbour waters). The highest mean values of organic matter concentration recorded as 11.7 mg l<sup>-1</sup> at the station 4, where organic waste is received from the residential area nearby, revealed that harbour basin is subjected to severe eutrophication. Orthophosphate in surface water exceeded the limit of 0.015mg l<sup>-1</sup> that is necessary for the establishment of large algal blooms. Oil and grease content of surface (9 mg l<sup>-1</sup>-82 mg l<sup>-1</sup>) and bottom water layers (22 mg l<sup>-1</sup>-241 mg l<sup>-1</sup>) inside the harbour exceeded the recommended value of 10mg l<sup>-1</sup> for the harbours according to the primary water quality criteria for harbours. The concentration of Cu and Pb in water also exceeded the standard value of 0.5mg l<sup>-1</sup> for European Union Estuary and Harbour Basin Water. MPN value of total coliforms (per 100ml) ranged between 5 and 2400, exceeded the recommended value (<100/100ml) of environmental quality standard by CEA of Sri Lanka. Also, the phytoplankton density ranged between 16356 cells/m<sup>3</sup> and 62500 cells/m<sup>3</sup> and higher densities were found inside the harbour. Results of this study revealed that the water quality of the harbour has been degraded and harbour is subjected severe oil pollution, organic pollution and microbial contamination.

**Keywords:** harbour, pollution, coliforms, eutrophication, oil