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A Preliminary Study on Water Quality of the Galle Commercial Port of Sri Lanka

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Abstract

Commercial ports and fishery harbors in Sri Lanka have faced severe pollution problems and Galle commercial ports is one of them. However, a systematic data collection on port water quality for the Galle port has not been conducted. Therefore, this study is carried out at Galle port, located in the southern coast of Sri Lanka with the intention of finding the current water quality state and also to identify the major pollution sources. Investigation is carried out at ten sampling locations in Galle Port at twenty seven days intervals during the period from 11, October 2018 to 03, December 2018. Total of 13 physicochemical parameters of water quality were measured to identify the pollution level and evaluate microbial contaminations at National Aquatic Resources Research and Development Agency laboratories. Because of non-availability of marine water quality standards for ports and harbors in Sri Lanka, results were compared to Indonesian water quality standards for ports and harbors, marine recreation and marine ecosystems, 2004. Results revealed that average concentrations of Nitrate, Phosphate concentration and Turbidity parameters exceeded the Indonesian water quality standards for marine ecosystems and average ammonia concentrations are exceeded the Indonesian water quality standards for ports and harbors, marine recreations and marine ecosystems. All the locations from stream mouths exceeded the permissible level of Indonesian marine water quality standards for ports and harbors, marine recreations and marine ecosystems for fecal coliform. Except two locations from commercial port, all other locations have not reached to required DO level given by the Indonesian water quality standards for marine ecosystems. Based on the results, it can be concluded that water quality of the Galle port is deteriorated and is subjected to physicochemical pollution and microbial contamination. The study identified, Moragoda stream, Modara stream and fishery harbor as the major pollution sources for water quality deterioration of Galle commercial port by the support with litter drained to streams, direct litter discharge to streams, septic tanks overflow to streams with flood or direct discharge, nutrient wash out from farm lands to streams and oil leakages to sea from fishery harbor.

Keywords: Galle port, Water quality, Harbor water pollution, Microbial contamination