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Study of BOD: COD Ratio as an Indicator for Wastewater of Rubber Industry Sector

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Abstract

When considering the rubber industry sector, the most significant challenge is the efficient wastewater treatment before discharging it into the natural environment. The rubber industry is considered to be highly chemical and water-intensive: and involves enormous quantitative s of waste production. The ratio between Biological Oxygen Demand (BOD₅) and Chemical Oxygen Demand (COD) is a widely used parameter in characterising wastewater and then the same was used in this study as an indication to measure the efficiency of wastewater treatment plant operated in the rubber industry sector. Data for the study was extracted from samples collected from 10 wastewater treatment plants of rubber industries in the Sabaragamuwa Province; two samples from each representing before and after treatment. The samples were tested in two replicated for BOD₅, COD, pH, and conductivity. These selected rubber factories contain lagoon/pond type wastewater treatment systems or activated sludge wastewater treatment systems. The results showed that the treated wastewater samples were within the range of 0.1–0.4 of BOD₅: COD and were below the BOD₅: COD permissible level as per CEA standards. (General standards for rubber in inland surface waters; Latex-BOD 60, COD 400; Lanka rubber/crepe rubber–BOD 50, COD 400) comparing the BOD, COD, pH, and conductivity influent and effluent of the treatment process proves the effectiveness of each treatment plant of the relevant industry. Tested samples show a high BOD₅: COD ratio in influent and effluent of wastewater treatment system indicate that wastewater of the industry is easily biodegradable. However, more research comparing the characteristics of different rubber manufacturing processes is needed to develop this approach further.

Keywords: BOD, COD, BOD: COD ratio, Wastewater treatment plant