

Quality Parameters of Offset Printing Wastewater

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Abstract : Samples of tap and wastewater were collected in three offset printing facilities in Novi Sad, Serbia. Ten physicochemical parameters were analyzed within all collected samples: pH, conductivity, m - alkalinity, p - alkalinity, acidity, carbonate concentration, hydrogen carbonate concentration, active oxygen content, chloride concentration and total alkali content. All measurements were conducted using the standard analytical and instrumental methods. Comparing the obtained results for tap water and wastewater, a clear quality difference was noticeable, since all physicochemical parameters were significantly higher within wastewater samples. The study also involves the application of simple linear regression analysis on the obtained dataset. By using software package ORIGIN 5 the pH value was mutually correlated with other physicochemical parameters. Based on the obtained values of Pearson coefficient of determination a strong positive correlation between chloride concentration and pH ($r = -0.943$), as well as between acidity and pH ($r = -0.855$) was determined. In addition, statistically significant difference was obtained only between acidity and chloride concentration with pH values, since the values of parameter F (247.634 and 182.536) were higher than $F_{critical}$ (5.59). In this way, results of statistical analysis highlighted the most influential parameter of water contamination in offset printing, in the form of acidity and chloride concentration. The results showed that variable dependence could be represented by the general regression model: $y = a_0 + a_1x + k$, which further resulted with matching graphic regressions.

Keywords : pollution, printing industry, simple linear regression analysis, wastewater

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