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EFFECT OF COVID-19 PANDEMIC ON CHEMICAL PARAMETERS OF WASTEWATER TREATMENT PLANT: A CASE STUDY IN ZONGULDAK CITY, TURKEY

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Abstract

Covid-19 was first identified in China at the end of 2019 and in Turkey the first cases started to be seen in March 2020. In pandemic, excessive and unconscious use of disinfectants with chemical or organic cleaning products had various different negative effects on wastewater. In this study, changes in chemical parameter data in treated and raw wastewater taken from the advanced biological wastewater treatment plant in Zonguldak province before and after the Covid-19 pandemic were examined. When the graphs obtained are examined, after the pandemic, it has seen that chemical oxygen need (COD) decreased by 4.85% and biological oxygen demand (BOD_5) diminished by 2.47%. There was an increase of 11.22% in the quantity of total suspended solids (TSS), 21.12% in the quantity of biological sludge and 6.28% in the return sludge. In addition to all these, a decrease of 4.48% in pH value and 41.54% in dissolved oxygen amount (DO) was determined after the pandemic. The effect of the pandemic on all parameters was examined by matrix diagram and ANOVA analysis. It is thought that the amount of BOD_5 and COD decreased as the population density decreased as a result of the restrictions and the tendency towards the distance learning activities in pandemic conditions and in addition to this unconscious use of cleaning products is thought to cause an increase in TSS and sludge amount. Considering all of these, if this study is evaluated together with microbiological parameters, it is thought that it can support future studies that may determine the change in the city's Covid-19 data.

Key words: biological oxygen demand, chemical oxygen demand, covid-19, pH, wastewater

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