

## Effect of Physicochemical Treatments on the Characteristics of Activated Sludge

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**Abstract :** The treatment of wastewater in sewage plants usually results in the formation of a large amount of sludge. These appear at the outlet of the treatment plant as a viscous fluid loaded with a high concentration of dry matter. This sludge production presents environmental, ecological, and economic risks. That is why it is necessary to find many solutions for minimizing these risks. In the present article, the effect of hydrogen peroxide, thermal treatment, and quicklime on the characteristics of the activated sludge produced in urban wastewater plant were evaluated in order to avoid any risk in the plants. The study shows increasing of the dose of H<sub>2</sub>O<sub>2</sub> from 0 to 0.4 g causes an increase in the solubilization rate of COD from 12% to 45% and a reduction in the organic matter content of sludge (VM/SM) from 74% to 36% . The results also show that the optimum efficiency of the heat treatment corresponds to a temperature of 80 ° C for a treatment time of 40 min is 47% and 51.82% for a temperature equal to 100 ° C and 76.30 % for a temperature of 120 ° C, and 79.38% for a temperature of 140 ° C. The treatment of sludge by quicklime gives the optimum efficiency of 70.62 % . It was shown the increasing of the temperature from 80°C to 140°C, the pH of sludge was increased from 7.12 to 9.59. The obtained results showed that with increasing the dose of quicklime from 0 g/l to 1g/l in activated sludge led to an increase of their pH from 7.12 to 12.06. The study shows the increasing the dose of quicklime from 0 g/l to 1g/l causes also an increase in the solubilization of COD from 0% to 70.62 %

**Keywords :** activated sludge, hydrogen peroxide, thermal treatment, quicklime

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