عنوان مقاله:

The effects of nutrients and folic acid on the biological treatment of petrochemical wastewater

محل انتشار:

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خلاصه مقاله:

Considering the advantages of biological systems for wastewater treatment in compatibility with the environment, the present study aimed to investigate the effects of different concentrations of folic acid, nitrogen, and phosphorus on the biological treatment of industrial wastewater at Tabriz Petrochemical Company (TPC) in Iran. The Taguchi method with the orthogonal array L9 was used to determine the optimal conditions of microorganism growth. Color, pH, nitrogen, phosphorous, sludge volume reduction, sludge volume index (SVI), and mixed liquor suspended solids (MLSS) were measured. According to the results, the three investigated factors could significantly reduce wastewater. After removing the folic acid color, modulating the pH, and reducing the SVI, the nitrogen factor was considered most effective. Nitrogen also had a significant effect on the removal of output wastewater (62.62%). In addition, the phosphorus factor had the most significant impact on wastewater reduction (65.25%). The optimal conditions were observed with 0.2 ppm of folic acid, 20 ppm of nitrogen, and 4 ppm of phosphorus in the three investigated parameters. Folic acid only significantly affected the increasing of MLSS (90.1%), and the optimal condition of this parameter was with 0.2 ppm of folic acid, 30 ppm of nitrogen, and 4 ppm of phosphorus. Sludge volume reduction was observed in all the reactors. The addition of folic acid, nitrogen, and phosphorous to the TPC wastewater lacking these materials could enhance the output parameters and reduce adverse environmental effects.

کلمات کلیدی:

Folic acid, Biological Treatment, nutrients, Petrochemical Wastewater