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Characteristic of COD and colour removal of azo dye in ozonation and biological treatment

Abstract

In this research, the characteristic of COD and colour removal of azo dye by ozonation and biological treatment was evaluated for applying in azo dye industrial effluent treatment. Reactive Red 120, Remazol Brilliant Blue, Reactive Green 19 and Reactive Black 5 has been selected amongst azo dyes due to its high solubility in aquatic environment. COD removal was contributed simultaneously by ozonation and biological treatment mechanism at lower ozone doses. However, it was significantly contributed by direct oxidation at higher ozone dose. The biodegradable fraction of COD could be further oxidized and completely removed by ozonation. Consequently, ozone will be competitively consumed by residual COD as well as biodegradable COD if higher ozone dose is applied. Therefore, ozonation is effective for reducing the colour of Reactive Red 120, Remazol Brilliant Blue, Reactive Green 19 and Reactive Black 5.

Keywords;
Azo dye; Biological treatment; Chemical oxygen demand (COD); Colour removal; Ozonation