

Current Trends in the Utilization of Photolysis and Photocatalysis Treatment Processes for the Remediation of Dye Wastewater: A Short Review

ABSTRACT

Development in the textile industry leads to an increased demand for the use of various dyes. Moreover, there is the use of some dyes in the food industry as well as medical diagnostics. Thereby, increased demand for dyes in various fields has resulted in dye-containing wastewater. Only a small portion of the generated wastewater is adequately treated. The rest is usually dumped or otherwise directly discharged into the sewage system, which ultimately enters rivers, lakes, and streams. The handling and disposal of such concentrated wastewater, especially the dye-containing wastewater, is considered to be a major environmental issue from the moment of its generation to its ultimate disposal. Conventional water treatment methods such as flotation, filtration, adsorption, etc., are non-destructive physical separation processes. They only transfer the pollutants to other phases, thereby generating concentrated deposits. The advanced oxidation process (AOP) is one of the most effective emerging methods for the treatment of wastewater containing chemical pollutants. The method involves the formation and interaction of highly reactive hydroxyl radicals under suitable activation conditions. These radicals are non-selective and efficient for the destruction and eventual mineralization of recalcitrant organic pollutants. This review aims at the pros and cons of using photocatalysis as an efficient AOP to degrade dye-containing wastewater