Zahedan J Res Med Sci. 2015 October; 17(10):e2089. DOI: 10.17795/zjrms-2089

Published online 2015 October 25. **Editorial**

Treatment of Textile Wastewater by Inorganic Coagulants

Meghdad Pirsaheb,[1] Abdollah Dargahi,[1] and Kiomars Sharafi[1,2,*]

[1]Department of Environmental Health, Faculty of Public Health, Kermanshah University of Medical Sciences, Kermanshah, IR Iran
[2] Department of Environmental Health, Faculty of Public Health, Tehran University of Medical Sciences, Tehran, IR Iran

*Corresponding author: Kiomars Sharafi, Department of Environmental Health, Faculty of Public Health, Kermanshah University of Medical Sciences, Kermanshah, IR Iran. E-mail: kio.sharafi@gmail.com

Received: January 23, 2012; **Accepted:** January 25, 2012

Textile dyeing industries wastewaters are contain significant amounts of organic dye compounds. Presence of organic dyes in industrial effluents due to avoid light penetration into the water, impaired photosynthesis, decreased oxygen transport into the water, the solubility of gases and their toxic effects, irreparable damage to the environment [1]. So, treatment of colored wastewater of textile industries before discharging them into the environment is essential. Biological treatment processes for textile wastewater treatment is rarely used. These processes are commonly used to remove biological decomposition of organic compounds and suspended solids are effective but not efficient for the removal of dyes from textile wastewaters, because the colored compounds containing resistant and complex structures that can be done to slow down the rate of biodegradation of colors. The most commonly methods for color removal from textile wastewater are physical-chemical methods such as coagulation, flocculation, adsorption, ozonation, reverse osmosis, membrane filtration and advanced oxidation [2]. Each of these methods has advantages and disadvantages for the removal of dyes from wastewater. The main advantages of colored wastewater using coagulation and flocculation process, not the production of intermediate products that are toxic and harmful, mainly because of the color compounds in this way is not decomposed. In addition, this method is relatively high cost and performance in large scale [1, 2].

The aim of the study is to evaluate the efficiency of alum and ferric chloride coagulants for wastewater treatment of textile factories. For this purpose, the effect of pH and concentration of coagulants was investigated. For this study, the coagulant aluminum sulfate (alum) ($Al_2(SO_4)_3$) and ferric chloride ($FeCl_3$) for color Crepe-Naz textile wastewater treatment plants by measuring of color, chemical oxygen demand (COD), biochemical oxygen demand (BOD), total suspended solids (TSS) and pH were used. pH values tested for the selection of optimal pH were 4, 5, 6, 7, 8 and 9 and in this study a total of 240 samples according to standard methods for water and wastewater treatment experiments were analyzed [3]. The results showed that ferric chloride coagulant for removal of TSS, COD and color compared to alum has higher efficiency, so that maximum removal of COD, and color by alum 36, 19 and 68.8% respectively, while this amount by ferric chloride is 72, 60 and 98%, respectively. The optimum pH for alum and ferric chloride coagulants, respectively 7 and 5 were obtained. The result of this study with conducted study by Joneidi and Azizi [2] was coordinated so that, in the study, ferric chloride than alum has better efficiency in removal of dye has shown. Based on the results, it can be concluded that ferric chloride coagulant for the removal of COD, TSS and color of textile wastewater compared to alum has been effective and therefore in identical conditions, its application is more preferable compared to alum.

References

1. Shi B, Li G, Wang D, Feng C, Tang H. Removal of direct dyes by coagulation: the performance of preformed polymeric aluminum species. *J Hazard Mater.* 2007;**143**(1-2):567–74.
2. Joneidi J, Azizi S. Comparison between color removal from synthetic wastewater using Alum and Chlorine.; *Proceeding of the 11th national congress of environmental health.*; Zahedan. Zahedan University of Medical Sciences; 2008.
3. Eaton AD, Franson MAH, American Public Health Association. American Water Works Association. *Water Environment Federation . Standard Methods for the Examination of Water & Wastewater*. 21 ed th. Washington D.C: American Public Health Association; 2005. p. 1200.