Research Article

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Using of Activated Carbon Adsorption in Wastewater Industries

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ABSTRACT

Use of activated carbon in waste water treatment is not a new idea, therefore since 1935 experience has been gained in its use to increases the coagulation and flocculation of solids, anaerobic digestion of sludge and for removal of water from it. Experience has shown that activated carbon powder as an additive at the time of addition of hydraulic load of waste water, results in the compression of sludge and facilitates the removal of water from it. In these experiments the usefulness of Powered Activated Carbon (PAC) is determined, but due to economical and the fact that high degree of treatment was not required, this was not fully accepted. In the past use of Granular Activated Carbon (GAC) was more popular compared to its powered type, and it also had higher efficiency. In this article, initially a literature review of work done on the use of Activated Carbon Powder and the trend of growth in its use and the modifications made during last few years in the world and Iran and finally various experiments performed on activated carbon pilot unit at one of the petro-chemical units in Iran, in order to analyze the usefulness of this material in waste water treatment. In addition, two type of commercial activated carbon powder were used from two different suppliers giving different results, the reason for these different results was also analyzed and this difference in result was attributed to different constituents. For every experiment 4kg of activated carbon was used in the pilot plant column. The samples for experiment were taken from the exit stream from the clarifier. Results were obtained for effect of parameters such as inlet volumetric flow rate of waste water and activated carbon structure on its performance.

1. Introduction

Today, the requirements of growing population and healthy environment away from the infections are more and more evident. Efforts to combat environmental contamination factor is the most important human activities today [1-5]. One of the most important factors in water contamination is sewage and waste water. Untreated sewage per cubic meter contaminated the amount of water resources heavily [6-10]. Over 99.9 percent of the sewage water is contains water, but the same small amount of solids in the sewage makes an important effect on the environment. Unfortunately, Citizens and industrial increased not only increase the amount of water, but also the amount of water pollution has been increased [11-14]. Especially over time due to the use of hundreds of chemical products in daily life and entering the wastewater and urban sewage discharge or consumer bodies and discharge of thousands of new chemical compounds in their industries and river, the water pollution has become more sophisticated [15-20]. As you know water provides the human free of charge and the simplest way for waste transmission in communities. Considering the increased public concern about the effects of new combinations of organic on human environment in the past decade, the need for more advanced treatment process to reduce pollutants and remove materials, especially materials that were not deleted in common important processes like biological, physical and chemical properties [21-24]. Among the improved methods, the powdered activated process in carbon activated sludge unit air is used. However, this method first was used for increasing efficiency activated sludge removal system known as priority pollutants, but then has a variety of applications [25-29]. Due to the above process in an appropriate stability system

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