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The Sanitization of Wastewater with Active Carbon by Sodium Hypochlorite

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Abstract

In a world facing growing challenges in water management and preservation of the environment, the efficient treatment of wastewater has become a priority indisputable. Innovative and sustainable techniques are sought to respond to this growing demand (treatment wastewater) may involve physical (settling, flotation, etc.), biological (anaerobic digestion, activated sludge, trickling bed, etc.) or physic-chemical/chemical (precipitation, disinfection, adsorption, etc.) processes. Among these, adsorption is one of the most used processes around the world with a view to eliminating various pollutants in wastewater networks. That's why our study focuses on this method. Where our works present a double environmental aspect, on the one hand a valuation of natural products in case the agricultural residue (Palm leaves) and secondly study the effectiveness of activated carbon adsorbent from these residues. We have developed a material rich in carbon from the carbonization of homogenate obtained from agriculture residue at 700 °C for a residence time of 60 minutes, were used as adsorbents for Sewage. To improve the adsorption capacity of carbons from agriculture residue has undergone a chemical treatment with sodium hypochlorite at a concentration of 5 N for a one day. Indeed, the effectiveness is evaluated through the following factors: contact time 24 hours, ratio (Solid mass/ volume of liquid) (1/10), stirring speed (200 tour/min), and ambient temperature. Once the optimum conditions are determined, this activated carbon (AC) is used for the purification of wastewater in the main purification treatment, while its adsorption capacity for chemical compounds is high. The results concerning the biological oxygen demand (BOD^5) lesser with 68% and chemical oxygen demand (COD) reduce by 63% and the concentration of NH4+ decrease by 20%, compared to the initial concentrations of these ingredients BOD_5, COD and NH^{4+} are satisfactory and encouraging to make other applications, the purifying of wastewater using activated carbon will allow us not only to reduce the cost of purification but also to contribute to the preservation of the environment.

Key Words: *Agriculture Residue, Active Carbon, Sodium Hypochlorite, Wastewater.*