Adsorption Process for Removal 2,4 Dichlorophenc from Wastewater by using Chitosan

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ckground: *2,4 dichlorophenol (DCP), one of the most lorophenol compounds family with highly toxic effect, exists in ricultural areas, chlorinated waters, discharging wastewater of lp and paper industries. Chlorophenols can cause damages to the hneys, liver, pancreas and weaken the central nervous system NS). In the current study we evaluate the adsorption of DCP by itosan in aqueous environments.*

aterials and Methods: *In this study we evaluated the effect of erational parameters such as time (15-90min), pH values (3-9), tial concentration of DCP (15-100mg/l) and the dose of chitosan 1-0.9g) in a batch reactor. A spectrophotometer at wavelength of 0nm was used to measure the concentration of DCP. Freundlich d Langmuir isotherm model and Pseudo-first order kinetic models d Pesudo-second order kinetic was drawn by using of the results tained in the adsorption process.*

sults: *Equilibrium time in the adsorption process was estimated to 75 minutes (DCP concentration 15mg/chitosan Concentration g and pH 6.5) with 76% removal efficiency, pH 3 was calculated the optimal pH in adsorption process (DCP concentration mg/l,Chitosan concentration 0.5g and time equilibrium 75min) h efficiency 79% and the value of efficiency decreased by reasing pH. In 15mg/l concentration of DCP maximum adsorption h an efficiency of 79% was observed. (Chitosan concentration g, time equilibrium 75 min. and pH 3) and the maximum 87% sorption efficiency of DCP was observed. Adsorption process lows of Frundlich isotherm with correlation coefficient of 0.9599 d the pseudo second order kinetic model with correlation fficient of 0.9649.*

nclusion: *According to results of the study, chitosan can be used remove of DCP from industrial wastewater due to of its perfect aracteristics such as biodegradability, resurgent ability, low cost d adsorption acceptable efficiency.*

ywords: *2,4 dichlorophenol, Chitosan, industrial wastewater, sorption process*

1. INTRODUCTION

Phenolic compounds are one of the most common pollut which include a wide range of organic chemicals phenol derivatives. phenolic compounds include phenol chlorophenols , nitrophenol and can be amino-phe Chlorophenol is one of the compounds in this group with h toxicity and COD that has low biodegradability and detrimental effects on living organisms and human health the low concentrations[1]. The most common chlorophen are 4-chlorophenol, 2, 4-dechlorophenol and 2, 4, trichlorophenol. 2, 4-dechlorophenol (DCP) is one of the m toxic compounds of chlorophrnilics, which is solid in the o air as colorless crystals and has high solubility in alcohol. most use of DCP is in manufacturing insecticides, pestici and an important matter in seed antiseptics. Contamina frequently resistant is seen mostly in agricultural areas, w disinfected by chlorine, pulp and paper mill waste indus output. Since chlorophenols cause damage to the kidn liver, pancreas, weakened the central nervous system and cause denaturation of protein molecules, the Environme Protection Agency (EPA) classified this compound as hazardous air pollutants.United States of Amer Environmental Protection Agency (UEPA)has conside phenol and its derivatives as 11 combinations of 126 chemi composition in the class of pollutants with high risk level.E recommends DCP concentration in drinking water less t 0.03 mg / l. World Health Organization (WHO) recommend 1µg / l in drinking water and 1mg / l as the maxim allowable concentration in wastewater discharges to surf water sources. Removal methods such as biological process chemical oxidation, solvent extraction, burning, reve osmosis, electrochemical methods and radiation were used remove excess amounts of phenol and phenol compounds u now[5]. Most of these methods have disadvantages such high cost, low efficiency, the need for pre-treatment before main refining process and emissions are surplus. Adsorpt