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Investigation and Comparison of Experimental Data of Ethylene Dichloride Adsorption by Bagasse with Adsorption Isotherm Models

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ABSTRACT

Due to the fact that the concentration of ethylene dichloride in the effluent of Alkali Petrochemical chlorine unit is often less than 500 ppm. Therefore, this method can be used to reduce the amount of ethylene dichloride in wastewater. Using bagasse as a carbon adsorbent to remove EDC from aquatic environments can be more cost-effective than commercial activated carbon, as well as a new approach. This could be because ethylene dichloride does not ionize easily. The adsorbent value. Also Freundlich isotherm model, the mean constant value of proportion K_f = 1.1 mg/g and the adsorption size intensity 1/n = 0.16 and the Langmuir model mean constant values were a = 0.1 and b = 2.6. Since ethylene dichloride is not easily ionized, the changes in soluble pH and the type of bagasse pre-treated with acid, base and distilled water have little effect on the adsorption rate.

1. Introduction

Effluent contains nutrients that can stimulate the growth of aquatic plants and may contain toxic kinetics, therefore, the reasons for the rapid and trouble-free transfer of effluent from production sources and then its treatment and disposal are not only desirable but essential in industrial societies [1].
hlorine is an important chemical element in water treatment, disinfectants and bleach and in mustard gas. Chlorine is also used in making a wide range of everyday items. Also, used to kill bacteria and other germs in drinking water supplies. Today, chlorine is always added to small reserves of water. Chemical 1, 2 D-chloroethane, commonly known by its old name ethylene dichloride is a chlorinated hydrocarbon and mainly used to produce vinyl chloride monomer (VCM, chloroethane) which is the main constituent for PVC production [2]. That is a colorless liquid with a smell similar to chloroform. 1, 2 D-Chloroethane is also used as intermediate for the production of other chemical compounds and as a solvent [3, 4].

If untreated effluent accumulates, decomposition of its organic matter may result in the production of large quantities of odorous gases. In addition, untreated effluent usually contains many pathogenic microorganisms that live in the human gastrointestinal tract or are present in some industrial wastes [5].
Effluent treatment is usually performed in three stages:

- The initial stage refers to the physical unit operations
- The secondary stage refers to the chemical and biological processes
- The advanced stage is a combination of all three types of processes [6, 7].

2. Bagasse and its Characteristics

Bagasse is one of the sugarcane by-products that make up about 20-30% of its weight. This product is a residual fibrous residue after extraction of sugar which is in the form of chipboard chips in yellow [8]. The overall composition of bagasse is fiber, moisture and soluble solids (mainly sugar). Bagasse fiber is a water-insoluble compound consisting mostly of cellulose (pentosane) and lignin. Cellulose is a polysaccharide with a chemical formula $(C_6H_{10}O_5)_n$ that forms the major part of the

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