INTRODUCTION

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Water pollution is one of the most important environmental problems in the world. There are many sources of toxic chemicals in the environment, such as badly managed landfills, pesticide run off and industrial pollution. Industrial wastewater represents the main source of environmental pollution with heavy metals, e.g. Cu, Pb, Zn, Cd, etc. Such metals may be discharged into the waters from various industries, including metal plating, storage batteries, alloy industries, dying, textile, fertilizers and other chemical industries. The progressive increase of industrial technology results in continuous increase in pollutants, so that a great effort has been devoted for minimizing these hazardous pollutants and hence avoiding their dangerous effects on animals, plants and humans.

Generally, these metals beyond the permissible levels may cause a poisoning, leading to dysfunction of the kidneys, reproductive system, liver, brain and also central nervous system **(Senthilkumaar *et al.*, 2000).**

The removals of these hazardous materials may be performed using various techniques, including precipitation, membrane filtration, ion exchange, sorptive flotation and adsorption. The removal of heavy metals via adsorption over solid adsorbents, e.g. activated carbons and others, is one of the most convenient methods used **(Gupta and Ali, 2002).**

Activated carbons are the most common adsorbents, and they are made from different plants, animal residues and

bituminous coal. The production of activated carbons from agricultural by-products serves a double purpose. First, it converts unwanted, surplus agricultural waste, of which billions of killograms are produced annually, to useful, value–added adsorbents. Many specific examples are found throughout the country where disposal of agricultural by – products has become a major, costly waste disposal problem. Second, activated carbons are increasingly used in water for removing organic chemicals and heavy metals of environmental or economic concern.

The current work aims at removing some metal ions, e.g. Zn, Cu, Mn, Pb, and Cd from industrial wastewaters produced by some factories in El- Qulayoubia Governorate by adsorption technique using activated carbons prepared from local agro-residues e.g. date pits, cotton stalk, rice straw and olive stone. Consequently, this study would involve the following:

(1) Survey study for the heavy metals found in the wastewaters taken from Kaha Factory of the Chemical Industries and the Egyptian Company of Dying and Textile.

(2) Preparation and characterization of activated carbons.

(3) Determination of the most suitable weight, pH and time of contact for the process.

(4) Conducting the adsorption process under the chosen weight of adsorbent, suitable pH and time of contact to calculate both the removal capacities of the prepared activated carbons and percentages of removal for each of the studied metal ions under these ideal conditions.