ABSTRACT

PERCENT ANALYSIS OF METAL ADSORPTION ON BINARY Pb/Cd SYSTEM USING BANANA KINDS OF ADSORBENTS *(Musa paradisiaca* L.*)* (Contact Time 105, 120, and 135 minutes)

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Various kinds of activities such as industry, agriculture, sedimentation of silt, and environmental changes are the main sources of water pollution. Heavy metals are one of the most persistent and non-biodegradable water pollutants. Biosorption is an alternative method to remove heavy metals from wastewater. Kepok banana peel can be used as heavy metal adsorbent, because it is easy to obtain and relatively inexpensive. In addition, Kepok banana peel contains cellulose which has a carboxyl functional group (-COOH) and a hydroxyl functional group (-OH) which can bind heavy metals in liquid waste. Contact time is one of the factors that affect the adsorption process. Because through the contact process, adsorption occurs as a result of physical interactions (adhesion) between the adsorbate and the adsorbent. In this study, binary metal Pb/Cd 50 ppm was mixed with each biosorbent 1.5 grams. The mixed solution was measured at pH 5, then stirred based on variations in contact time of 105, 120, and 135 minutes at a speed of 250 rpm. The results of heavy metal adsorption were analyzed using Atomic Absorption Spectrophotometer, and then calculated to obtain the highest adsorption percentage. In the results of this study, the highest percentage of Pb/Cd binary adsorption was at the use of a contact time of 120 minutes with the percentage results of 95.64% for Pb metal, and 81.72% for Cd metal. The adsorption of Pb was higher than that of Cd, because the Kepok banana peel had a greater affinity for Pb which was probably due to the size of the ionic radius of Pb was smaller than that of Cd. which makes it easier to be adsorbed on the active site. Based on this, it can be concluded that Kepok banana peel (*Musa paradisiaca* L.) as a biosorbent is proven to be able to adsorb binary metal Pb/Cd. This operating condition can be considered as a simulation that can be used to determine the operating conditions for the binary Pb/Cd adsorption in the actual factory effluent.

Keywords*: Adsorption, Pb/Cd Binary Metals, Kepok Banana Peel, Contact Time, Atomic Absorption Spectrophotometer*