

ABSTRACT

DETERMINATION OF OPTIMUM CADMIUM (Cd) ADSORPTION BASED ON CONTACT TIME VARIATION USING KEPOK BANANA PEEL (*Musa acuminata* L.) BIOSORBENT (Contact Time 90, 105, 120 and 135 minutes)

Nuris Islamiyah

Heavy metals are the most toxic pollutants contained in industrial waste water and are generally contaminants in groundwater. Cadmium (Cd) is a non-biodegradable heavy metal that is highly toxic and carcinogenic to living things, even though the concentrations contained are very small. To remove pollutants from wastewater, one of them is by using biosorbents or adsorbents obtained from organic or natural materials which are called biosorption techniques. Contact time is one of the important factors in the adsorption process, this is because it is related to the adsorption efficiency and adsorption reaction speed.

This study aims to determine the effect of contact time on the percentage of adsorption and the optimum time needed to adsorb the heavy metal cadmium (Cd) using kepok banana peel (*Musa acuminata* L.) biosorbent. Variations of contact time used were 90 minutes, 105 minutes, 120 minutes and 135 minutes. This study used a 1.5 gram Kepok banana peel biosorbent which had been processed into powder. The initial concentration of the cadmium solution was 50 ppm, at pH 5, and stirring speed at 250 rpm.

Based on the research that has been done, the % adsorption of cadmium metal ions (Cd) reached the highest value at a contact time variation of 135 minutes, namely 83.5540%. Meanwhile, % adsorption of metal cadmium (Cd) ions was lowest at 90 minutes contact time variation, namely 81.4700%. So it can be concluded that variations in contact time affect the proportion of adsorption and the optimum time needed to adsorb the heavy metal cadmium (Cd) using Kepok Banana peel (*Musa acuminata* L.) biosorbent, namely at a contact time of 135 minutes.

Keyword: Cadmium, Adsorption, Kepok banana pels, Contact time