

REMEDIATION OF HEAVY METAL CONTAMINATED WASTEWATER USING CHITOSAN

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**Final Year Project Report Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.) Biology
In the Faculty of Applied Science
Universiti Teknologi MARA**

JANUARY 2017

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ABSTRACT

REMEDICATION OF HEAVY METAL CONTAMINATED WASTEWATER USING CHITOSAN

Chitosan is a part of natural substances known as effective material to eliminate heavy metal such as zinc, lead and copper from polluted wastewater. The example application of biopolymers that emerging adsorption methods for removal dyes and heavy metal is chitosan. The objective for this study were to prepare and compare chitosan powder from prawn shell to treat using different method for biological, chemical and physical treatment heavy metal contaminated with wastewater for wastewater treatment. The results of this study showed that the screening of heavy metal which using chitosan were able to remove heavy metal especially lead. Lead ion (Pb^{2+}) showed the highest percentage of heavy metal removal which is 79.63% as compared to copper ion (Cu^{2+}) and zinc ion (Zn^{+}) which are 14.50% and 7.48% respectively. So, lead has been chosen to be the best removal using chitosan with the ANOVA p-value is equal to 0.000. Then, the lead ion was continued by the three different processes which are biological treatment, chemical treatment and physical treatment. The percentage of removal heavy metal by lead ion for biological treatment is 83.60% while for chemical treatment is 85.42% and physical treatment is 21.31%. Therefore, chemical treatment has been chosen to be the best removal using chitosan with the ANOVA p-value is equal to 0.000. Although chemical was chosen to be the best, biological treatment can be considered as a practical treatment since it is cheaper than chemical treatment since the value was almost the same.