

UNIVERSITI TEKNOLOGI MARA

**ADSORPTION OF HEAVY METALS
AND DYES FROM TEXTILE
WASTEWATER BY USING
EGGSHELL**

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Project submitted in fulfillment of the requirements for
the degree of
**Bachelor in Environmental Health and Safety
(Hons.)**

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DECLARATION BY STUDENT

Project entitled “Adsorption of Heavy Metals and Dye from Textile Wastewater by Using Eggshell” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, Mr. Razi Ikhwan B. Md. Rashid. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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In the name of Allah, The Most Gracious, The Most Merciful.

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ABSTRACT

Introduction: Textile industry is known as one of the generators that produced a large amount of wastewater pollutants due to the large quantities of water consumed during fabric processing. **Objective:** The objectives of this study is to investigate the potential of eggshells as adsorbent for removal of pollutants from the textile industry wastewater without treatment. **Methodology:** The wastewater sampling at the selected area was conducted including in-situ and ex-situ sampling to identify the characteristics of the wastewater and compare the sample with Environmental Quality (Sewage and Industrial Effluent) Regulations 1974. Therefore, alternative treatment such as adsorption was investigated. The efficiency of eggshell as the adsorbent are really effective and able to remove the heavy metals (Pb, Zn, Mn and Cu) and dyes concentration in a large amount. **Result:** Based on the result, the wastewater does have a high reading of turbidity, high concentrations of BOD and COD, highly coloured effluents and heavy metals. All the characteristics of textile wastewater violated the permissible limit standard stated by the Environmental Quality (Sewage and Industrial Effluent) Regulations 1974. The optimum condition in the removal of heavy metals and dyes was obtained. As for lead (Pb) and copper (Cu) show the highest percentages of removal up to 100% followed by the manganese (Mn) and zinc (Zn) which is 91% and 62% respectively. Meanwhile, the removal percentages for the dyes is 80% **Conclusion:** This study concluded that the textile wastewater containing high concentrations of pollutant including the heavy metals and dyes.

Keywords: *Adsorption, Textile Wastewater, eggshell, dyes, heavy metals*