

**UNIVERSITI TEKNOLOGI MARA**

**ASSESSMENT OF CHEMICAL  
PROPERTIES AND ALGAL  
ABUNDANCE IN LITTLE ZAB  
RIVER, IRAQ**

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## ABSTRACT

The quality of water in the Iraq Zab river becomes an issue due to the river deterioration and the decrease in the discharge of the river. This study aims to determine the algal abundance in three selected sampling stations (residential sites, industrial sites, and agricultural sites), assessing the relationship between chemical properties of water and algal abundance, assessing the chemical properties of water, and measuring the heavy metal concentration and heavy metal pollution index within the sampling area. The water samples were collected from the little Zab river from three selected sampling stations: a residential site, an industrial site, and an agricultural site. The samples were collected every 30 days for a total duration of 3 months. The findings showed that there are 11 species of algae within the three sites. The results confirmed a significant relationship between the concentration of chemical properties and the abundance of algae at the residential, industrial, and agricultural sites, respectively ( $r = 0.542$ ,  $t = 3.698$ ), ( $r = 0.469$ ,  $t = 2.963$ ), and ( $r = 0.475$ ,  $t = 3.392$ ). Also, the findings showed that the total suspended solid showed higher percentage in the industrial site compared to the residential and agricultural sites at  $29 \pm 1.63$ , and the molybdenum element varied at  $146.67 \pm 9.43$  mg/kg,  $149 \pm 9.09$  mg/kg, and  $149.67 \pm 9.74$  mg/kg in the residential site, industrial site, and agricultural site, respectively. All other parameters are within the range recommended by WHO standard measurements.

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