

عنوان مقاله:

Measuring pollution based on total petroleum hydrocarbons and total organic carbon in Tigris River, Maysan Province, Southern Iraq

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خلاصه مقاله:

In the current study, the concentrations of total petroleum hydrocarbons (TPHs) in water and total organic carbon content in sediments were measured. A number of environmental factors, including water temperature, dissolved oxygen, pH, electrical conductivity, nitrates, and phosphates, have also been measured in the Tigris River deposits and in three selected stations on its course in Maysan Province in southern Iraq during the months of November, ۲۰۱۴, December, ۲۰۱۴, and January, ۲۰۱۵. The highest temperature, ۲۵ °C, was recorded at Ali Al Gharbi District Station (St۱) in November, while the lowest temperature, ۱۵ °C, was recorded at Al-Amara District Station (St۲) in January. Moreover, the highest value of dissolved oxygen, ۹.۱ mg L^{-۱}, was recorded in St۱ in January, while the lowest value, ۷.۵ mg L^{-۱}, was recorded at the same station in December. All pH values were within the baseline trend for the duration of the study, with the highest level, ۷.۸, recorded at St۲ in November, while the lowest level, ۷.۰۵, at Al Majar Al-Kabir District Station (St۳) in the same month. The highest value for electrical conductivity was ۲۴۱۶ μs cm^{-۱} at Al-Amara District Station in November, while the lowest value was ۲۰۰ μs cm^{-۱} at the same station in December. The highest concentration of nitrate ion, ۶.۲۵ mg L^{-۱}, was recorded at St۲ in November, while the lowest value, ۳.۸ mg L^{-۱}, at St۱ in December. Moreover, the highest phosphate value, ۰.۵۹ mg L^{-۱}, was recorded at St۲ in January, while the lowest, ۰.۰۴۹ mg L^{-۱}, at St۳ in November. The highest rate of total organic carbon content was ۲.۱۵%, recorded at St۲ in November, while the lowest, ۱.۷%, at St۱ in the same month. The highest concentration of TPHs in the water was ۵.۲۲, recorded at St۲ in January, while the lowest, ۲.۸۵, at St۱ in November. The present study concluded that St۲ was heavily contaminated with organic matter. This station had the highest concentration of total petroleum hydrocarbons, which is mainly due to the increased population density beside the station, leading to increased human activities and the introduction of various wastes. These wastes contain nutrients and organic compounds, such as compounds containing petroleum derivatives, discharging to the water and sediment. Furthermore, there was a positive correlation between the organic carbon rate (%) and the concentration of petroleum hydrocarbons.

کلمات کلیدی:

Water pollution, total petroleum hydrocarbons, total organic carbon, Environmental factors, Tigris River

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