

Total Organic Carbon Percentage and Texture of Sediments in Tigris River

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Abstract

Total organic carbon has a significant impact on both chemical and biological processes occurring in sediments, while sediments texture refers to the size of the particles that make up the soil. Sediments samples were collected from four stations along the southern part of the Tigris River seasonally (two months per season) during the period August, 2022 to July, 2023) to measure the TOC% and determine the sediments texture. Results show that the highest percentage of total organic carbon (1.21%) was recorded in the first station in the Al-Majar station during the summer season. Also, the lowest total organic carbon value was recorded in the first station in the Al-Majar (0.18%) during the autumn season.

the study showed the presence of small amounts of clay and starting from the Al-Majar and rising down to Qurna, while the silt increases in the same direction, and it has been observed that there is a significant rise in the amount of sand from the first station and gradually decreases as we head towards the Qurna in Basra, which may be due to human activity or because of mud deposits that increase towards the south.

Key Words : Total Organic Carbon ,TOC, Tigris river, sediments texture, pollution,

1. Introduction:

Total Organic Carbon (TOC) is a measure of organic content in water and sediment and contributes significantly to the acidity of natural water and sediments through organic acids and biological activities due to light absorption and water chemistry through the complexity of minerals, observed that both human and natural processes led to high concentrations of organic carbon in the sediments. Carbon sediments increases as the grain size decreases because organic matter is absorbed on metal surfaces and has a high susceptibility to fine-grained deposits. Thus, higher levels of TOC require larger absorption surfaces and more minerals are absorbed into organic matter [1].

Naturally occurring forms of organic carbon are derived from the decomposition of plants and animals. In soils and sediments, there is a wide range of organic carbon forms ranging from newly deposited litter (such as leaves, twigs and branches) to highly degradable forms such as humus [2].

Total organic carbon has a significant impact on both chemical and biological processes