



## Indices of Residual Heavy Metals Pollution in Shatt AL-Arab Estuary – Part 2

Zahra'a S. R. Al-Shamsi<sup>1</sup>, Abbas H. Mohammed<sup>1</sup>, Hamid T. Al-Saad<sup>2</sup>

<sup>1</sup>College of Science, Department of Geology, University of Basrah, Basrah, Iraq

<sup>2</sup>College of Marine Science, University of Basrah, Iraq

**Abstract** This study was carried out to monitoring of Shatt Al-Arab river pollution by assessing the degree of residual heavy metals pollution (Pb, Ni, Cu, Cr, Zn, Co, Cd and Fe) in the sediment samples by using Flame Atomic Absorption Spectrophotometer (FAAS) for sediment core at six stations along Shatt Al-Arab estuary they are: Al-Qurna, Al-Deer, Al-Qarma, Al-Ashar, Abu-Alkasib and Al-Fao). The degree of Pollution in the sediments had been evaluated by using Contamination factor (CF), Enrichment factor (EF), Geo accumulation index (I-geo), pollution load index (PLI), dna Anthropogenic Factor (AF).

**Keywords** Heavy metals, Residual, sediment core, Shatt Al-Arab estuary

### Introduction

Within rapid industrialization and economic development in coastal areas around the world heavy metals are introduced to the coastal environment [1,2]. Heavy metals are transported as either dissolve species in water or in association with suspended sediments and are subsequently deposited and stored in bottom sediments. After burial some the distribution of some redox sensitive metal could be modified by natural processes in the sediment. The bioaccumulation of heavy metals in coastal sediments can be hazardous to the local population which uses the coast area for fishing activity [3,4]. Heavy metals may distribute in sediments as exchangeable, acid soluble (bound to carbonates), reducible (bound to Fe/Mn oxides and hydroxides), oxidizable (bound to organic matter) and residual (bound to silicates and detrital materials) species. The chemical fractionation of heavy metals in sediments can be investigated by carefully employing a selective extraction scheme from the several extraction schemes available in the literature [5]. The assessment of sediment enrichment with elements can be carried out in many ways. The most common ones are the index of geo-accumulation index (I-geo), pollution load index (PLI) Enrichment factor(EF), Anthropogenic Factor (AF) and Contamination factor (CF).



Figure 1: The study stations

