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Study of Some Heavy Metals Concentrations from the Soil of Selected Areas at the North Part of Basrah, Iraq

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Abstract - The current study was conducted in the north of Basra to show the state of contamination and how it is affected by different pollutants. including heavy elements and some important environmental indicators of the soil. The study period extended from September 2021 to June 2022 to determine the concentrations of some heavy metals in the soil in (wet-dry) where six elements were estimated, namely zinc, copper, lead, nickel, cadmium, and Iron in the exchangeable phase and the residual phase of the soil Heavy elements have been extracted by standard methods and determined by using an atomic absorption spectrometer, as well as the determination of total carbon organic matter (TOC %) and soil texture. Total organic carbon results are shown in the current study in the soil, where the highest value of total organic carbon (TOC %) was recorded in the dry season in Al-Hawyer region station-1 which has a value of 0.480 % and a rate of 0.207 % . The lowest value, was 0.02 % and recorded in the AL-Deer Nillage at station-5, with a rate of 0.183 % but the highest value of carbon in the total organic matter (TOC %) in the wet season was recorded in the Al-Nashwa region (0.615 %) at station with a rate of 0.355 % and the lowest value of 0.125 % was in the Al-Hawyer region station-1 and at a rate of 0.16%. The results of heavy metals for the study area in the soil in the dry season of the exchangeable phase showed that the highest rate of elements (zinc, copper, lead, nickel, cadmium and iron) 60.18, 53.37, 22.95, 57.86, 7.46 and 720 µg/g respectively and the lowest rates recorded were : 20.94, 15.01, 11.96, 23.81, 3.11 and 502.32 µg/g As for the results of heavy elements in the residual phase of the soil (zinc, copper, lead, nickel, cadmium and iron), it recorded the highest rates : 93.24, 20.78, 31.63, 77.82, 9.98 and 751 µg/g where the lowest recorded rates were : 47.29, 8.08, 17.19, 53.28, 9.98 and 550.86 µg/g respectively in the wet season. The heavy weight of the study area in the soil of the exchangeable phase showed that the highest rate of the elements zinc, copper, lead, nickel, cadmium, and iron was: 152.70, 25.35, 20.07, 88.32, 6.73, and 703 µg/g respectively, the lowest recorded rat 17.24, 2.03, 17.10, 20.11, 2.69 and 274 µg/g respectively. The results of heavy metals in the residual phase. The residual zinc element ranged rate between 5.04-41.84 µg/g while the copper element ranged from 0-23.99 µg/g and the lead element ranged from 12.16-24.22 µg/g as for nickel, it ranged between 39.73 and 62.95 µg/g and cadmium ranged from 5.31-10.70 µg/g finally rates of iron elements were also between 504.18 and 721 µg/g.

دراسة تركيز بعض العناصر الثقيلة في التربة لمناطق مختارة في شمال البصرة، العراق

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