Air quality in Kirkuk regarding PM10 concentrations.

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- **Abstract:** This study explored the concentration of PM10 in Kirkuk governorate north Iraq. A total of 165 samples were collected from three (3) monitoring station, One (1) sample per month per station were collected for the period (2014-August 2018), To estimate air quality in Kirkuk based on PM10particulates, The data were analyzed and compared with the International standards like: United states Environmental Protection Agency (US-EPA) and standard index of Iran, (have similar weather conditions especially in west part of Iran), which includes the following: 0-50µg/m3 (good), 51-150 µg/m3(moderate), 151-350µg/m3 (unhealthy), 351-420 µg/m3 (very unhealthy), and more than 420µg/m3 represent the whorst case (hazardous) [13], based on above classification the pm10 concentration(0-150)µg/m3lied within the Iraqi standards range and more than 150µg/m3 was considered out of Iraqi standards accepted levels. ArcGIS10.3 interpolation technique was used for estimations the concentrations of the (PM10) particles measured using data of three (3) stations in the study area for the period (2014-July2018). The results showed clearly that the current changes in air quality in term of PM10, depend on (US-EPA) standard index within a period (2014-AUGEST 2018) was(27.8,54.5,10.3,3.6)% and respectively, for 2014 results 22%,41% were within (good) and (moderate), while 27.7% of total samples was (unhealthy), meanwhile (very unhealthy) and (hazardous) was 2.7%and 5.5% respectively. that most of the results lies over Iraqi standards limits of ambient air and within the rank (moderate) according to (US-EPA) standard index, from other hand, the annual mean concentrations of PM10were over the national standard limit also and lies within the rank (moderate) according to (US-EPA) standard index, while the total mean of 165 samples was 116µg/m3 indicating that these results lies over national standards limits also. By other mean, GIS spatial analysis tools showed that the north west of Kirkuk governorate were the most polluted part regarding to PM10 particles comparing with other area included in the study, that's may be linked to the nearby oil and gas production and its negative effects on air quality especially if we consider that most of these oil and gas sites docent have air pollution control instruments and use open fire pits inside its locations and inefficient flare firing systems, the GIS spatial analysis give evidence that the industrial discharges from oil and gas sectors has great bad impact on air quality which need urgent intervention to treat its discharges according to Iraqi emissions standards limits.

- **Keywords:** Kirkuk governorate, Iraqi, north west, PM10