Biochem. Cell. Arch. Vol. 22, No. 1, pp. 3387-3399, 2022	www.connectjournals.com/bca	*ISSN 0972-5075*
DocID: https://connectjournals.com/03896.2022.22.3387		*eISSN 0976-1772*

ESTIMATION OF THE CONCENTRATIONS OF SOME HEAVY METALS IN WATER IN ANBAR PROVINCE, IRAQ

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(Received 2 November 2021, Revised 28 December 2021, Accepted 17 January 2022)

ABSTRACT : The water quality of the Euphrates River was assessed from Al-Qaim to Fallujah, by estimating the concentrations of some heavy elements in it and assessment of water quality through the water quality index and according to the water standard specifications for the concentrations of heavy elements in it. This indicator is an effective tool to know the quality of water for different uses, as well as to determine the extent of pollution of the Euphrates River water to heavy elements, water quality management and making the right decisions in these activities. This indicator was used to determine the validity of the waters of the Euphrates River For human use and to determine the indicator, eight heavy elements were relied on for the river water specification, measured in the specified areas in Anbar Province for the period from 2020-2021. The measured elements are lead, cadmium, nickel, cobalt, mercury, arsines, zinc, chromium. Where (33) water samples were collected from different regions of the cities of Anbar Province, from the city of Al-Qaim to the city of Fallujah. The study showed a relative increase in the concentrations of heavy metals concentrations, which are lead, cadmium, chromium, cobalt and nickel. In most districts of Anbar Province, where they were polluted by these elements, and through the statistical analysis (SPSS) used, it was observed by taking the least significant difference between the averages of the areas and the local and global concentration. The concentration rates of some heavy metals, namely lead, chromium, increased. In October 2020, an increase in the concentration of the elements nickel, cobalt and cadmium was observed, while in June, an increase in the concentration of the elements mercury, arsines and zinc was observed.

Key words : Heavy metals, Euphrates river, heavy elements, Anbar, Iraq.

How to cite : Bashar Abdulazeez Mahmood and Sura Hassan Hadi (2022) Estimation of the concentrations of some heavy metals in water in Anbar province, Iraq. *Biochem. Cell. Arch.* **22**, 3387-3399. DocID: https://connectjournals.com/03896.2022.22.3387

INTRODUCTION

Water exists in Iraq in different forms, including surface water, rain and groundwater, and each of them differs from the other in terms of its quantities and specifications, biological, chemical, physical, and economic importance. The optimal use of these sources has not been achieved due to many problems, including the large waste and waste of water, especially the Euphrates River, which originates from the lands The neighboring countries are Turkey and Syria. And that most of human activities are based on water and the main reason for its pollution with industrial, agricultural and other waste, and that the population is increasing (Al-Kufi, 2008).Anbar Province and a number of southern provinces depend for their water sources on the Euphrates River, so water quality standards (raw and treated) must be determined on environmental chemical treatment, due to the urgent need for water. One of the processing units (Al-Fahdawi, 2012). Water is one of the main pillars in particular, as water enters at a rate between (70-90%) in the composition of all living bodies by their weight. A person needs daily two and a half liters of water, which he enters through eating and drinking (Khaled Faleh and Inam, 2005). Heavy metals are one of the causes of water pollution, and the metal is defined as a heavy metal based on its density, as heavy metals are either foodstuffs or are highly toxic like lead (Issabin and Fawzia, 2015). Polluted water also kills bacteria in the soil. Also, polluted water loses its ability to fertilize plants. The environment in Iraq is affected by the influence of the climate. Iraq's climate is characterized by being hot or very hot in the summer, with little rain and low humidity, as well as by high sunlight, and all of this leads to water evaporation and the appearance of Salts on the surface of the soil 5.

Using materials stronger than alum to sterilize the water of the station that reaches homes in all areas of the province.

6. The necessity of cooperation between the executive authorities concerned with environmental affairs, the Ministry of Environment and Water Resources, the Ministry of Health and the University of Anbar in order to develop practical plans to preserve the water resources in the province and to shield the danger of pollution in heavy elements in the waters of the Euphrates River.
7. The study recommends the use of advanced devices to detect concentrations of heavy metals in water and try to treat them.

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