

Study of fish deaths circumstances phenomenon in Diwaniyah River, South of Iraq

Hazim A. Walli

University of Al-Qadisiyah, College of Science, Department of Environment Science, Diwaniya 58002, Iraq

(Received 13 July, 2019; accepted 17 August, 2019)

ABSTRACT

The current study focus on fish death phenomenon in 2018 in Diwaniya River south of Iraq. This phenomenon cross over all Iraqi river from north to south especially in fish farming , the chemical and physical parameters show bad number according to WQI in water, also EDX examine of SEM (scanning electron microscopy) show a high concentration of Arsenic in plants of the river. Fish from farming and river appear arsenic in muscle, brain and gills of fish that live in river.

Key word : Fish death Phenomenon, Al-Diwaniya River, Arsenic, EDX, Fish farming

Introduction

Recently, Iraq witnessed suddenly the phenomenon of fish deaths in the Euphrates River and without previous warning and this constitutes a surprise disaster. The incident may be a dramatic sign of worsening pollution and water issues in Iraq, that is progressively troubled to supply a sufficient supply of unpolluted water, particularly within the south of the country (Retures, 2019).

It remained an intractable mystery, especially, there were no traces to use explosives or toxic substances for hunting, as the case previously observed, where contaminated Bacteria and Fungi were isolated and identified and chemical and physiological tests were also done for water samples. The samples subjected to Electron microscopy Energy dispersive x rays (EDX) to determine the concentrations of elements in water. Different parts of fishes took from AL-Diwaniyah River A, as well as AL-Hilla River where the largest percentage of fish's mortality was in the Musayyib area. The results were compared to get the causes of losses in fish.

Study Location

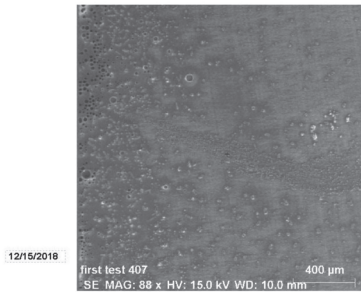
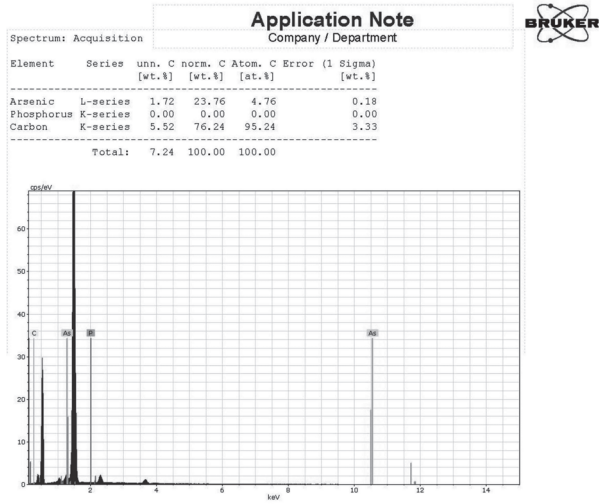
The study included the Euphrates River in AL-Diwaniyah city and the samples were collected from dead fish, river water, and water plants. The sixth sample of AL-Hilla River was compared with the results and brought to the laboratories of the Environmental Research Unit.

Materials and Method

(1) Physiological and chemical parameters included: (pH, E.C., TDS, DO, BOD, TH, Alkalinity, Cl-, SO4-2, Mg, Ca) and other parameters (2) 2 - Examination of heavy elements in water, fish and plants. 3. Fungi and Bacteria examinations (Assad and Hussain, 1986). 4. EDX electronic microscopy in Kufa University. College of Science.

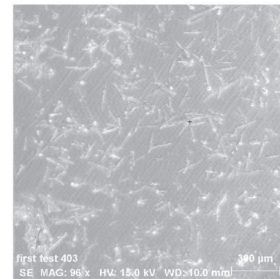
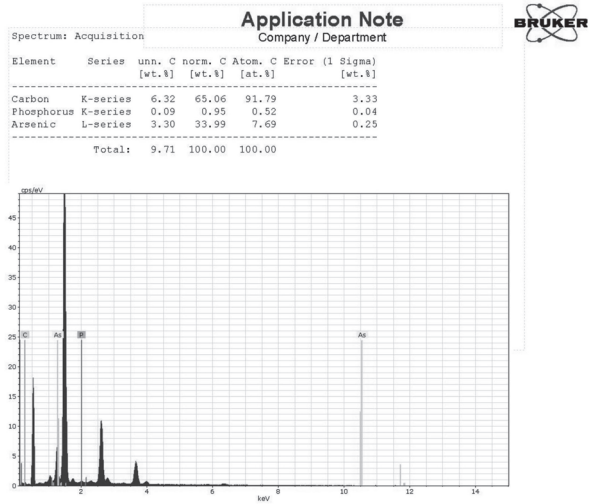
Results and Discussion

The culture media such as Mannitol solt agar, TCBS, and EMB were used to isolate bacteria from water



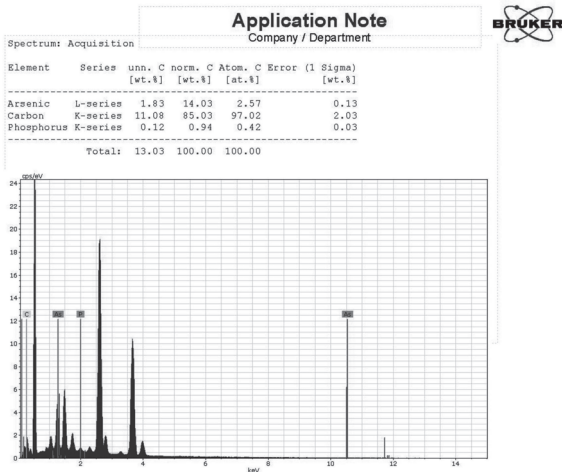
Page 1 / 2

Fig. 2. Muscle



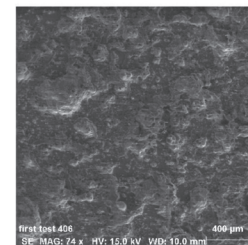
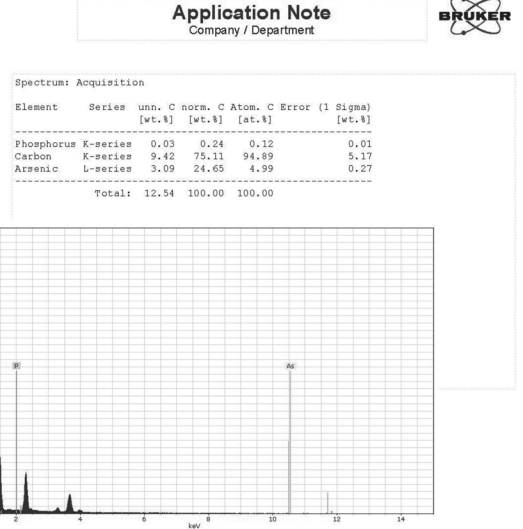
Page 1 / 2

Fig. 4. Intestine



Page 1 / 2

Fig. 3. Brain



Page 1 / 2

Fig. 5. Plant

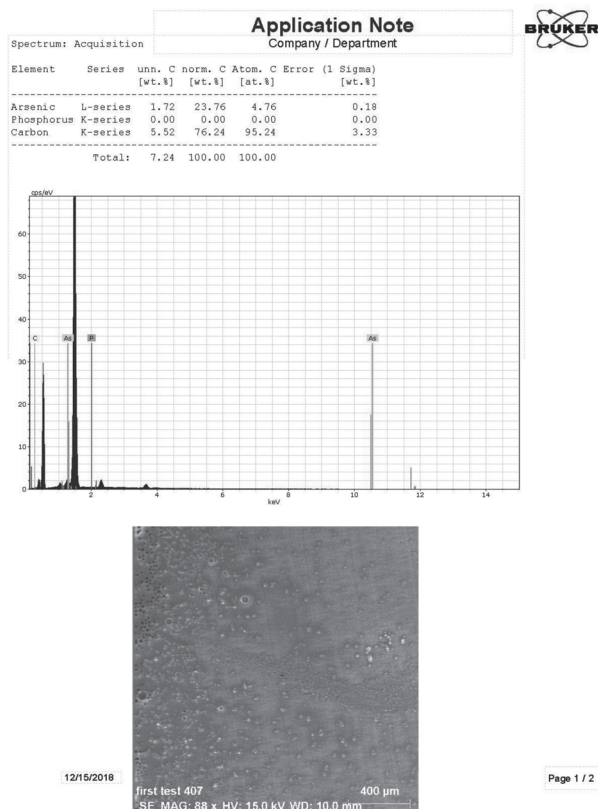


Fig. 6. AL-Diwanyiah River

arrangement: 1. Muscle 2. Brain 3. Intestine
4. Plants 5. AL-Diwanyiah River Water 6. AL- Hilla
River Water.

References

- AL- Atar, E. A. 1998. The effect of Glyphoste herbicide on common carp *Cyprinus carpio* L. in oxygen rich and depleted water. M.Sc. Thesis, College of Education for women, University of Baghdad.10 -13p (In Arabic).
- Al-Hasnawi, S., Hussain, H., Al-Ansari, N. and Knutsson, S. 2016. The Effect of the Industrial Activities on Air Pollution at Baiji and Its Surrounding Areas, Iraq. *Engineering*. 8 : 34-44.
- APHA. 1985. American Public Health Association. Standard methods for the examination of water and waste water.
- Argos, M., Kalra, T., Rathouz, P.J., Chen, Y., Pierce, B., Parvez, F. 2010. Arsenic exposure from drinking water, and all-cause and chronic-disease mortalities in Bangladesh (HEALS): a prospective cohort study. *The Lancet*. 376(9737) : 252-
- Assad, N.M. and Hussain, S.A. 1986. Water Quality of Iraq, Tigris River from Tusan-Baghdad. *Journal of Water Resources*. 5(2).
- Awadh, S. 2013. Assessment of the potential pollution of cadmium, nickel and lead in the road-side dust in the Karkh district of Baghdad City and along the highway between Ramadi and Rutba, West of Iraq. *Merit Res. J. of Environ. Sci. and Toxicol.* 1(7) : 126-135.
- Flanagan, S.V., Johnston, R.B. and Zheng, Y. 2012. Arsenic in tube well water in Bangladesh: health and economic impacts and implications for arsenic mitigation. *Bull World Health Organ*. 90 : 839-846.
- Hakanson, L. 1980. An Ecological Risk Index for Aquatic Pollution Control. A Sedimentological Approach. *Water Res.* 14 : 975-1001.
- Khalaf, K.T. 1961. The Marine and Fresh Water fishes of Iraq. Baghdad Al-Rabitta Press 164 pp.
- Quansah, R., Armah, F.A., Essumang, D.K., Luginaah, I., Clarke, E., Marfoh, K. 2015. Association of arsenic with adverse pregnancy outcomes/infant mortality: a systematic review and meta-analysis. *Environ Health Perspect.* 123(5) : 412-21.
- Retures, 2019. <https://www.reuters.com/article/us-iraq-fish/iraq-fish-farmers-hit-by-carp-deaths-amid-fears-over-pollution-idUSKCN1NA1QT>.
- Taher, A.G. and Soliman, A.A. 1999. Heavy metals concentrations in surficial sediments from wadi El Natrun Salin Lake, Eygept. *Inrt. J. Salt Lake Res.* 8(1): 75-92.
- WHO, 2010. The WHO recommended classification of pesticides by hazard – guide lines to classification 2009 – 2010, Geneva. (Unpublished report VBC/88. 953