

## The Copper Content of Some Egyptian Waters

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### S u m m a r y

The copper content of Mediterranean water and the brackish water Lake Maryut was determined. Factors effecting the distribution are given.

The present paper deals with the first determination of copper in waters of the eastern harbour of Alexandria representing true sea water, also in the waters of Lake Maryut, a closed, brackish water lake situated to the south of Alexandria, and which receives in some of its basins, untreated sewage and industrial wastes.

The copper content of the polluted stations are grouped together and an average figure is given. An average figure is also given for the unpolluted stations.

In the marine area, two stations were analysed. Station I in the middle of the harbour representing semienclosed Mediterranean waters, and station II in the open sea. Copper was determined by the diethyldithiocarbamate method.

Copper content of the eastern harbour water ( $\mu\text{g}/\text{l}$ )

|    | Oct.<br>1972 | Nov. | Dec.  | Jan. | Feb. | Mar. | Apr. | May |
|----|--------------|------|-------|------|------|------|------|-----|
| I  | 0.19         | -ve  | 4.44  | 0.76 | 0.25 | 0.89 | 1.14 | -   |
| II | 0.63         | 0.44 | 26.68 | 1.33 | 0.19 | 0.19 | 0.95 | -   |

|    | June | July | Aug. | Sept. |
|----|------|------|------|-------|
| I  | 0.44 | 1.59 | 2.28 | 1.14  |
| II | 1.46 | 2.16 | 2.60 | 1.33  |

The copper content of Lake Maryut water

|    | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May  |
|----|------|------|------|------|------|------|------|------|
| I  | 2.86 | 1.21 | 2.86 | 4.13 | 3.81 | 5.78 | 1.78 | 5.08 |
| II | 1.21 | 1.14 | 0.69 | 1.84 | 1.27 | 2.03 | 1.14 | 5.64 |

|    | June | July | Aug. | Sept. | I=Av. of poll. stations.    |
|----|------|------|------|-------|-----------------------------|
| I  | 14.3 | 2.22 | 1.71 | 4.00  |                             |
| II | 1.52 | 1.90 | 2.09 | 3.49  | II=Av. of unpoll. stations. |

The copper content of Lake Maryut is higher than that of the Mediterranean water. In a decreasing order the investigated areas can be put in the following sequence as concerns copper content: Polluted part of Lake Maryut, unpolluted part of Lake Maryut, Open Mediterranean water, enclosed Mediterranean water. As Lake Maryut contains  $H_2S$  in considerable quantities ranging between 2-60 mg/L (Wahby et al, 1978), we can say that all the copper in Lake Maryut is nonionic.

Part of the copper content of the eastern harbour may be in the ionic form as no  $H_2S$  was detected in the water samples.

The winter maximum concentration of copper in the waters of the eastern harbour may be due to its minimum utilization by growing phytoplankton and other organisms. This winter maximum was replaced by a summer maximum in Lake Maryut perhaps due to:

- 1- Increased discharge of industrial wastes and other domestic effluents.
- 2- Higher decomposition rate of organic matter in summer.
- 3- Release of part of the adsorbed copper, on either organic or inorganic detritus.

## REFERENCES

1. Wahby, S.D., S.M. Kinawi, T.I. El-Tabbakh, and M. Abdel Moneim (1978). Chemical Characteristics of Lake Maryut. Estuar. and Coast. Marine Sc. Vol. 7: 17-28.

