

Spectrographic Determination of Trace Metals in Lake  
Maryut Sediments

Saad D. Wahby

Institute of Oceanography and Fisheries, Alexandria, Egypt

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Thirty two samples collected from the bottom of Lake Maryut were analysed spectrographically for the non-volatile groups of elements. Twenty samples were analysed for the volatile ones.

Results of analysis are given. The correlation coefficient between a number of elements was calculated.

Lake Maryut, situated to the south of Alexandria, is a closed brackish water lake, with an area of about 6300 hectares.

Thirty two bottom samples were collected using a Peterson grab from localities covering evenly the lake bottom. These samples were analysed spectrographically for the nonvolatile elements, Fe, Mn, Cu, Co, V, Cr, Ni, Ba and Sr. Twenty samples were analysed for the volatile elements, Pb, Sn, Zn and Ag.

Iron in the lake sediments varied between a maximum of 3 % and a minimum of 0.5 % with an overall average of 1.3 %. Manganese varied between 1360 and 140 ppm with an overall average of 490 ppm. The distribution of manganese

was nearly identical with that of iron. The copper content ranged between 500 and 16 ppm, with an overall average of 100 ppm.

The polluted parts of the lake had higher copper in the sediments than the unpolluted parts. A positive correlation coefficient was proved between copper and barium indicating a biogenic origin of copper.

Cobalt had a concentration between 9 and 3 ppm, with an overall average of 5.2 ppm. The correlation coefficient between cobalt and organic carbon was 0.55. The concentration of vanadium varied between a maximum of 125 ppm and a minimum of only "a trace".

Chromium in Lake Maryut sediments varied between 70 and 20 ppm with an average of 37 ppm. Nickel varied between 157 and 16 ppm, with an average of 40 ppm. A weak positive correlation coefficient (0.4) was calculated between nickel and organic carbon. Barium content of the sediments varied between 500 and 80 ppm with an overall average of 220 ppm, while strontium had a maximum concentration of 1500 ppm and a minimum of 160 ppm. Nearly all the samples analysed were richer in strontium relative to barium.

The volatiles: The lead content of the samples analysed varied between 1650 and 38 ppm. 50 % of the samples had lead content less than 100 ppm. Tin varied between 77 ppm and "a trace", the overall average was 23 ppm.

Zinc concentration varied between 2960 and 70 ppm, and silver was represented of a maximum concentration of 54 ppm, 70 % of the samples analysed had silver content less than 10 ppm.