PHYTOPLANKTON COMPOSITION AND HEAVY METAL CONCENTRATIONS OF LAKE TERKOS (ISTANBUL, TURKEY), A DRINKING WATER RESOURCES

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In this study, water quality and heavy metal pollution status of Lake Terkos, which is one of the drinking water resources of Istanbul metropolitan, were analyzed. For this purpose, phytoplankton composition, some water quality parameters and heavy metal concentrations in the surface water of Lake Terkos were investigated. Samples were collected at 8 sampling sites in March 2013 (spring) and September 2013 (autmn). A total of 33 taxa, belonging to Charophyta (2), Chlorophyta (5), Cryptophyta (1), Cyanobacteria (4), Dinophyta (1), Euglenozoa (2) and Ochrophyta (18) divisions were identified. The phytoplankton density varied from 87 ind/cm^3 to 14697 ind/cm^3. The highest density of phytoplankton was recorded at station 3 in autmn and the lowest at station 6 in spring. Ochrophyta members were dominant in terms of the species numbers. The *Anabaena spiroides* (Klebahn) of Cyanobacteria was recorded as the dominant species during the study period. The habitat of *Anabaena spiroides* has been defined as eutrophic, both stratified and shallow lakes with low nitrogen content (Padisak *et al*., 2009). Recording high reproduction of this species especially in autmn indicates that the lake is transforming from mesotrophic character to eutrophic character. Measured concentrations of heavy metals and nutrients showed difference related to sampling points. As a result of measurements, the minimum and maximum heavy metal and mineral nutrient concentrations of measured water samples were as follows; Al (0.210- 0.272 mg/L), B (0.864- 1.407mg/L), Ca (221.625- 315.326 mg/L), Cd (0.004- 0.013 mg/L), Cr (0.013- 0.038 mg/L), Cu (0.009- 0.026 mg/L), Fe (0.216- 0.331 mg/L), K (100.877- 175.828 mg/L), Mg (122.997- 216.514 mg/L), Na (160.377-240.528 mg/L), Pb (0.007- 0.021 mg/L) and Zn (0.127- 0.202 mg/L). It was observed that Lake Terkos is highly polluted by some heavy metals. Especially B and Cd concentrations indicate the class 4 water quality (EPA, 2002). It is necessary to take precautions for improving the water quality of Lake Terkos immediately because it supplies an important part of the drinking water demand of Istanbul Metropolitan.

Keywords: Phytoplankton, water pollution, heavy metals, Lake Terkos

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