Absorption Capability Examination of Heavy Metals by Spirogyra Alga in Ahvaz Water Treatment Plant

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Abstract : The present study examined the potential capability of Spirogyra algae remove heavy metals Zn, Pb, Cu, and Cr from the water. For this purpose, the water treatment No. 3 of Ahvaz County in Khuzestan Province of Iran was selected as a case study. From 8 sampling stations, 4 stations were dedicated to the water samples and 4 stations to the algae samples. According to the obtained results, the concentration of the heavy metals Cr, Cu, Pb, and Zn in water samples were within the ranges of 1.98-19.53, 0.67-13.45, 1-23.18, and 2.12-83.04 µg/L. Besides, the concentration of heavy metal Cr, Pb, Cu, and Zn in spirogyra algae samples varied between the ranges 2.30-3.61, 2.06-3.43, 2.29-2.56, and 9.88-10.84 µg/L. The highest amount of metal absorption in spirogyra algae samples was related to the zinc. The obtained results also indicated that the last spirogyra algae sample which was at the inlet of Tank 4 absorbed the lowest concentration of metals. This would be due to the treatment process along the course of ponds resulted in completely pure water at the outlet without the existence of algae on the sides. The paper also provides some useful recommendations on this issue.