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WATER QUALITY STUDY OF THE LUMBARDHI RIVER IN THE PRIZREN AREA USING PHYSICO-CHEMICAL AND HEAVY METALS ANALYSIS

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ABSTRACT

This research will provide a more accurate vision of the Lumbardhi River's water quality in the study region. Several physico-chemical parameters, such as; temperature, pH, EC, TDS, major ions (Ca^{2+} , Mg^{2+} , Na^+ , K^+ , NH_4^+ , NO_2^- , Cl^- , NO_3^-) were determined. The acquired results have been compared to the Water Framework Directive (DKU-WFD, 2000/60) and found to meet the directive's standards. Heavy metals have been analyzed using inductively coupled plasma optical emission spectroscopy (ICP-AES). In the water sampling sites, the concentration of Fe as the most abundant element was: 0.897 to 0.485 mg/L, Zn varies from 0.513 to 0.392 mg/L, Ni from 0.174 to the highest of 0.235 mg/L, Mn 0.141-0.194 mg/L, Pb 0.142-0.254 mg/L, whereas As, Cd, Co, Al and Co, were under limit detection in all of the water samples. Also, in the sludge ones the highest concentration element is Fe, followed by Zn, Mn, Ni and Pb. The highest concentration of Fe is in sample M3. The concentration varies from 0.985 mg/kg to the lowest of 0.698 mg/kg, Zn from 0.913 to 0.565 mg/kg, Mn from the highest of 0.413 to the lowest of 0.186 mg/kg, Ni 0.212 to 0.185 mg/kg, Pb 0.187 mg/kg to 0.143 mg/kg, followed by Cu, Co and Al. Even in the soil samples, iron varies from; 0.652 mg/kg to the highest of 0.989 mg/kg, Zn starts from 0.589 to 0.798 mg/kg, Mn from 0.119 to 0.189 mg/kg, Ni 0.139 to 0.178 mg/kg and Pb 0.163 to 0.189. The concentration of Co was observed in three soil samples from 0.033 to 0.064 mg/kg, whereas, Al is presented from 0.045 to 0.054 mg/kg followed by Cu from 0.049 to 0.098 mg/kg. The study shows that we are dealing with moderate pollution with these elements in the river, but to have a firm conclusion, it is advisable to examine more the zone of study.

Key words: The Lumbardhi River, soil, sludge, water, pollution, ICP-AES technique.