

Assessment of pollution load index and heavy metal accumulation in soil of rural areas of Bairagiya drain in district Allahabad

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ABSTRACT : Assessment of heavy metal (Cu, Fe, Zn, Pb, and Ni) accumulation in soil irrigated with wastewater of Mawaiya drain in Naini area of Allahabad district, using contamination factor (CF) and pollution load index (PLI). Samples of soil was taken at depth of 0-<5, 5-<10, 10-<20, 20-<25cm and analyzed by using Atomic Absorption Spectroscopy (AAS). The maximum contamination was observed for iron in soil irrigated with wastewater of Bairagiya drain. The study area conducted to observe the contamination of heavy metal in soil and contamination factor calculated for Cu (maximum 0.0373) in summer season, Fe (maximum 4.5169) in Winter season, Zn (maximum 0.0160) winter season, Pb (maximum 0.0026) in monsoon season for both the year and Ni (maximum 0.0004) in summer season during 2011-13. The pollution load indices (PLI) were found to be maximum is 0.0002 in summer season and winter season and minimum is 0.0001 in monsoon season for both the year. Finding of study support both to manage utilization of wastewater for irrigating field and to regulate the discharge of wastewater into the drains to minimize its effect on soil, crop and on consumers.

Key Words : Contamination of heavy metal, Bairagiya drain, waterborne diseases, wastewater irrigated soil, contamination factor, pollution load index (PLI), atomic absorption spectroscopy (AAS).