

Identification of Persistent Trace Organic Pollutants in Various Waste Water Samples Using HPLC

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Abstract : Qualitative validation was performed to detect the presence of persistent organic pollutants (POPs) in various wastewater samples collected from domestic sources (Askari XI housing society, Bedian road Lahore) industrial sources (PET bottles, pharmaceutical, textile) and a municipal drain (Hudiara drain) in Lahore. In addition wastewater analysis of the selected parameter was carried out. pH for wastewater samples from Askari XI, PET bottles, pharmaceutical, textile and Hudiara drain were 6.9, 6.7, 6.27, 7.18 and 7.9 respectively, within the NEQS Pakistan range that is 6-9. TSS for the respective samples was 194, 241, 254, 140 and 251 mg/L, in effluent for pet bottle industry, pharmaceutical and Hudiara drain and exceeded the NEQS Pakistan. Chemical oxygen demand (COD) for the wastewater samples was 896 mg/L, 166 mg/L, 419 mg/L, 812 mg/L and 610 mg/L respectively, all in excess of NEQS (150 mg/L). Similarly the biological oxygen demand (BOD) values (110.8, 170, 423, 355 and 560 mg/L respectively) were also above NEQS limits (80 mg/L). Chloride (Cl-) content, total dissolved solids (TDS) and temperature were found out to be within the prescribed standard limits. The POPs selected for analysis included five pesticides/insecticides (D. D, Karate, Commando, Finis insect killer, Bifenthrin) and three polycyclic aromatic hydrocarbons (PAHs) (naphthalene, anthracene, phenanthrene). Peak values of standards were compared with that of wastewater samples. The results showed the presence of D.D in all wastewater samples, pesticide Karate was identified in Askari XI and textile industry sample. Pesticide Commando, Finis (insect killer) and Bifenthrin were detected in Askari XI and Hudiara drain wastewater samples. In case of PAHs; naphthalene was identified in all the five wastewater samples whereas anthracene and phenanthrene were detected in samples of Askari XI housing society, PET bottles industry, pharmaceutical industry and textile industry but totally absent in Hudiara drain wastewater. Practical recommendations have been put forth to avoid hazardous impacts of incurred samples.

Keywords : HPLC studies, lahore, physicochemical analysis, wastewater

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