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Analysis of Pharmaceuticals in Influents of Municipal Wastewater Treatment Plants in Jordan

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Abstract : Grab samples were collected in the summer to characterize selected pharmaceuticals and personal care products (PPCPs) in the influent of two wastewater treatment plants (WWTPs) in Jordan. Liquid chromatography tandem mass spectrometry (LC–MS/MS) was utilized to determine the concentrations of 18 compounds of PPCPs. Among all of the PPCPs analyzed, eight compounds were detected in the influent samples (1,7-dimethylxanthine, acetaminophen, caffeine, carbamazepine, cotinine, morphine, sulfamethoxazole and trimethoprim). However, five compounds (amphetamine, cimetidine, diphenhydramine, methylenedioxyamphetamine (MDA) and sulfachloropyridazine) were not detected in collected samples (below the detection limits <0.005 µg/l). Moreover, the results indicated that the highest concentration levels detected in collected samples were caffeine, acetaminophen, 1,7-dimethylxanthine, cotinine and carbamazepine at concentration of 182.5 µg/L, 28.7 µg/l, 7.47 µg/l, 4.67 µg/l and 1.54 µg/L, respectively. In general, most of compounds concentrations measured in wastewater in Jordan are within the range for wastewater previously reported in India wastewater except caffeine.

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