Geophysical Research Abstracts
Vol. 21, EGU2019-4990, 2019
EGU General Assembly 2019

Development of new analytical methods for emerging pollutants in waste water by on line coupling LC-GC using the TOTAD interface.

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The occurrence of the emerging organic pollutants in the aquatic environment is not new, but their distribution an accumulation is not well known (Rivera-Jaimes et al., 2018). Some of the main sources of these type of contaminants in the environment are the untreated waste water, the effluents from the waste water treatment plants (WWTPs) and the leachate. In the recent years the scientists have paid attention to the analysis of these pollutants. Direct analysis of emerging pollutants in complex matrices is difficult because they are present at low concentrations and are associated with the sample matrix (Mongolodi Dimpe and Nomngongo, 2016). The development of new robust, sensitive and reliable analytical methods to allow their determination is of utmost importance in order to stablish their presence, distribution and behaviour in the environment (Ferreira da Silva et al., 2011).
Liquid chromatography (LC) is an alternative to traditional extraction techniques and on-line liquid chromatography-gas chromatography (LC-GC) has become a powerful tool for the trace-level analysis of complex matrices. The TOTAD interface is a fully automated interface for on-line coupling LC-GC where LC can be carried out in normal as well as in reversed phase (Pérez et al., 2000). The development of analytical methods using the TOTAD interface required the optimization of several variables related to the LC and the GC steps and to the performance of the TOTAD interface. In the present work the procedure to develop an analytical method is presented, specifying for the case of the analysis of the four main phthalates (DMP, DEP, DBP and DEHP) in a matrix as complex as leachate. The sample was directly injected into the LC injector valve with no sample pretreatment step other than a simple filtration. The LC step separates the target analytes from matrix interference. Two different LC fractions are collected in a fraction collector, designed to this aim, and then transfer to the TOTAD interface, which concentrate the analytes and totally eliminate the solvent and transfer the analytes to the GC-MS system where the analysis is carried out..vaz

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