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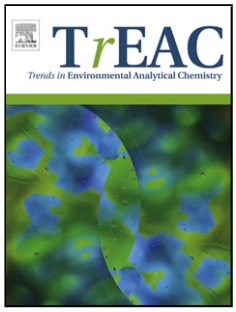

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On-line sample extraction and purification for the LC-MS determination of emerging contaminants in environmental samples

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Highlights

- On line-SPE methods were developed for most of the emerging contaminants classes
- Most of the multiresidual methods uses wettable and polar embedded reverse phases
- On-line techniques were applied in cleanup of extracts of solid environmental samples
- RAM and TFC are used for on-line cleanup, but TFC is more effective for biota extracts

Abstract

In the present paper the application of on-line preparation techniques applied to LC-MS for the determination of emerging contaminants in environmental samples are critically reviewed highlighting the advantages but also the limits and the way to overcome them. Recent methods are collected in a detailed table and discussed in the text according to the different classes of compounds. The implementation of on-line SPE made possible the effective development of faster methods by reducing the analysis time and thus increasing the analytical productivity. The on-line SPE method are particularly suitable in studies where only limited sample material is available, as the sample volume can be as low as 1 ml. Most of the multiresidual methods have been developed using wettable and polar embedded reverse phases, sometimes sequentially packed with weak ionic exchangers in order to widen the polarity range of the adsorbents. On-line techniques have been also applied in cleanup of extracts of solid environmental samples, such as sediment, soil and biota, in order to minimize the ionization suppression effects from the matrix. Many applications employed RAM , often coupled to monolithic pre-concentration columns, but there is an increasing number of application of TFC for the determination of emerging pollutants in environmental samples.

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