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# Emerging contamination in coastal marsh waters of the eastern Spain

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The use of drugs of abuse is increasing worldwide and causes not only a well-known serious social problem but also concern as environmental emerging contaminants. Drugs of abuse are excreted unmetabolized or as metabolites in urine and feces, in fact, most consumed ones have been determined in the sewage system [2], but their occurrence in surface waters of natural ecosystems [3] has been scarcely studied.
In many cases, the sewage waters are not appropriately processed either by a lack of sewage treatment plants or by overloaded the capacity of them. Due to the limited research undertaken in this field, there is slender data and minimal understanding of the environmental occurrence, transport, fate and exposure for these compounds.
One of the most important European type ecosystems are coastal wetlands, which have suffered during the last decades an increasing human pressure. This has been reflected through the intensification of agriculture and construction of infrastructures in their surroundings or even draining part of them. As a result, the density of population and its residues affect them in a first place.
The aim of the present work is to expand the range of Spanish wetlands investigated to the Oliva-Pego marsh, which is an example of the described situation. This area, with an approx. area of 1,290 ha, is found in the extreme south of the Gulf of Valencia, and it is included in the list of the RAMSAR Convention on wetlands. In order to assess the levels of drugs of abuse, twenty-three samples were taken in this wetland, on April 2009. Samples were taken from the lagoon and from the most important channels that flow in it.
A simple and robust method, using solid-phase extraction (SPE) and liquid chromatography tandem mass spectrometry (LC-MS/MS, for the simultaneous determination of 14 drugs of abuse and their metabolites (cocainics, amphetamine-like compounds, cannabinoids, and opiates) in surface waters was developed. The highest recoveries, as well as the simplest protocol, were obtained for Oasis HLB cartridges (6 mL/200 mg) using 250 mL of water. The proposed method was linear in a wide concentration range, with correlation coefficients higher than 0.998.
Metamphetamine, MDA, MDMA, Ecgonine methyl ester, ketamine, morphine, benzoylecgonine, cocaine, methadone, 6-acetylmorphine were found at concentrations in the range of 0.2 ng/L until 123.2 $\mu$g/L. The results obtained are showed in table 1. They confirmed that the method is suitable for screening these compounds in the environment, highlighting the convenience to carry out a better treatment of residual waters before its discharge in it.

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