

## DETERMINATION OF COMPOUNDS OF EMERGING CONCERNS IN SLIGHTLY ACIDIC AGRICULTURAL SOIL SAMPLES

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As a consequence of outstanding properties of animal manure, i.e. source of plant nutrients, potential to improve physical and biological properties of soil, manure had been used for soil amendments for centuries. Fertilization with livestock manure and rarely with composted human excreta (demographic habit) is common method during food production in rural area in Serbia. This study dealing with the determination of compounds of emerging concerns (CECs) in agricultural soil from the region without centralized sewerage network where a mix of livestock manure and human waste was used in agricultural production. Compounds with broad range of physico-chemical properties were selected including pharmaceutical active compounds (ibuprofen, naproxen, carbamazepine, diclofenac (DCL)), industrial compounds (bisphenol-A (BPA), p-tert-octylphenol), natural and synthetic hormones (estrone (E1), 17 $\beta$ - estradiol, 17 $\alpha$ - ethynyl estradiol (EE2)), pesticides (alachlor, atrazine, endrin, diazinon). Sample preparation was based on the application of QuEChERS (quick, easy, cheap, effective, rugged, and safe) method assisted by ultrasound and solid-phase extraction (SPE) as clean-up step for the simultaneous extraction of different potential toxic compounds from soil samples. The detection and quantification of selected compounds were done by using gas chromatography coupled with triple quadrupole mass spectrometry when some of the analyzed CECs required derivatization. Among the all studied compounds, DCL, BPA, E1, and EE2 were quantified. BPA, E1 and EE2 were quantified in all analyzed soil samples while DCL was quantified in 33% of analyzed samples. DCL, BPA, E1 and EE2 were detected in soil samples with concentration range from 0.151 to 0.151 ng/g, 0.526 to 0.830 ng/g, 0.121 to 0.199 ng/g and 0.118 to 0.333 ng/g, respectively indicating that the sources of the ones could be the sewage waste containing the CECs from excreted animal and human faces.

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