

***In situ* calibration of passive samplers for the monitoring of steroid hormones in wastewater**

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Wastewaters are a significant source of organic contaminants. Although wastewaters are treated in wastewater treatment plants (WWTP), organic contaminants can be found in the environmentally relevant concentrations also at the output of the WWTP. They can act as endocrine-disrupting compounds. Steroid hormones affect the endocrine system at very low concentrations. Interest in determining their presence in the environment (sub ng per litre) has increased in recent years.

In situ pre-concentration of steroid hormones from wastewater using adsorption-based integrative passive samplers represent a promising approach for monitoring of estrogens in water at ultra-trace concentrations.

Our study investigated the applicability of passive sampling for monitoring of estrogens at sub ng L⁻¹. Three types of passive samplers (POCIS and two sampler variants based on SDB-RPS) were calibrated in situ in treated municipal wastewater for the purpose of monitoring five estrogens. The aim of the study was to determine the uptake parameters of estrogens in POCIS and Chemcatcher-type passive samplers during a 14-days exposure in wastewater. Uptake of estrogens was compared with steroid contaminations in daily collected composite water samplers.

Although none of the tested methods proved to be capable of reaching the extremely low LOQs based on EQS for steroids, it showed that this goal may be achievable using a synergic combination of integrative passive sampling with a selective and sensitive sample clean up and instrumental analysis.