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# Sorption of 17-$\alpha$-ethynyl estradiol on iron minerals of hydromorphic soils

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Chemicals with endocrine effects occur in natural environments, such as water and soil. These compounds are found in low doses and little is known about their environmental impacts. Endocrine disrupting compounds (EDCs) interfere with hormone system and may cause adverse health effects in an intact organism. Steroid estrogens, for instance 17-$\alpha$-ethynyl estradiol (EE2), are identified as one of the most important endocrine disruptors. After taking EDCs by humans these are gone through metabolic processes and then excreted. Their solubility in water is low, therefore the persistence and bioavailability in the aquatic environment depend on their sorption on the solid phase. During the sewage treatment estrogens may be adsorbed onto the sludge or remained in the water. Furthermore, recycled water and wastewater sludge are often used in agriculture, so these materials can be appeared in the environment not only by direct release of effluents to waterways.

Clay minerals and iron Fe(III) oxide-hydroxides (mainly goethite) are considered as adsorbents in water-soil systems, due to their relatively large specific surface area. In this research, sorption of 17-$\alpha$-ethynyl estradiol on soils formed on the same parent material with different composition of clay minerals and iron oxides in aqueous solutions was investigated. EE2 was determined by high-performance liquid chromatography (HPLC) with a fluorescence detector. Our results provide further information on the fate of steroid estrogens, which may help decrease the risk of EDCs in the environment.

Sorption experiments of EE2 show that soils with more iron oxides have greater adsorption capacity comparing to that have relatively low iron content.

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