

## Occurrence and removal of endocrine disrupters in wastewater treatment plants for small communities

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### ABSTRACT

The current study examined the fate of endocrine disrupting compounds in three small communities' wastewater treatment plants (WWTP), including stabilization ponds, trickling filters and activated sludge. The results showed that WWTP of small communities were affected by estrogenic and dioxin-like compound contamination ranging from 1.6 to 50 ng.L<sup>-1</sup> estradiol equivalents and 5.3 to 73 ng.L<sup>-1</sup> dioxin equivalents. The stabilization pond system seemed to be the most effective for estrogenicity removal, with 96% efficiency, compared to 51% for a trickling filter alone. Total removal of estrogenic compounds was increased when a stabilization pond system was used as a finishing treatment or when an additional physical treatment was conducted. Activated sludge treatment removed 75% of dioxin-like activity. Additional physical treatment had no impact on dioxin-like compound removal. Although the large contact area with air in maturation ponds represents a risk for air contamination of the water, maturation ponds seemed effective for dioxin-like compound removal. The efficiency of stabilization ponds as a finishing treatment system for the removal of estrogenic and dioxin-like compounds should be taken into account when selecting wastewater treatment systems for small communities.

**Keywords:** Activated sludge; Endocrine disrupter; Estrogenic; Dioxin-like; Stabilization ponds; Trickling filter

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