

Investigations at wastewater treatment plants into extensive P-removal and simultaneous elimination of micropollutants

As part of the measures of the Water Framework Directive (WRRL) to reduce the phosphorus pollution in water, the P-removal at the municipal wastewater treatment plants (WWTPs) in recent years was nationwide intensified.

The previous annual mean values for WWTPs size classes (GK) 5 should fall below 0.3 mg / L. In the future, GK 3-5 WWTPs should also maintain an annual average of 0.2 mg / L. This can be achieved by a post-precipitation, which is usually part of a filtration stage. Nevertheless, filtration technology influences the approach for micropollutant removal.

In Baden-Württemberg, several WWTPs of different sizes are already operating with one stage for targeted micropollutants elimination, equipped with a filtration system. For the processes with powdered activated carbon (PAC), precipitant is dosed for the retention of the PAC, thus these processes have higher P-removal performances. Such methods for P-removal and micropollutants elimination can be combined.

This project aims to evaluate the process technologies for micropollutants elimination that are currently considered to be feasible by experts, regarding their potential for the extensive P-removal. Especially, the processes used so far in Baden-Württemberg should be examined in detail.

Besides, the potential for extensive P-removal and an improvement in COD(residual)-elimination shall be shown for existing large-scale plants for micropollutants elimination.

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Figure 1: Further purification stage using powdered activated carbon for targeted elimination of trace substances at the Böblingen-Sindelfingen wastewater treatment plant (Source: KomS)