

Institute for Sanitary Engineering, Water Quality and Solid Wastemanagement | ISWA

Research

Assessment of Micropollutants and Pathogens Before and After the Implementation of Ozone Treatment at the Eriskirch Wastewater Treatment Plant

Adsorption treatment with activated carbon and ozonation have proven themselves for the removal of micropollutants. While the adsorption processes (PAK, GAK) are not suitable for the targeted retention of antibiotic-resistant bacteria (ARB), a reduction in the number of bacteria could be achieved with the ozone treatment.

For this reason, the „Unteres Schussental“ wastewater association decided in 2016 to set up the first industrial-scale ozonation on a wastewater treatment plant in Baden-Württemberg at the Eriskirch wastewater treatment plant. The disinfectant effect of ozone is intended to improve the effluent quality of the sewage treatment plant and thus the quality in the Eriskirch lido.

However, various studies show that the percentage of ARB can increase after ozone treatment. It is however unclear, due to the cell destruction caused by ozone treatment, whether the resistance genes will be taken up by other cells during the subsequent filter passage.

The intended analysis program should be able to answer the following questions:

- How is the micropollutants removal of the wastewater treatment plant before and after implementation of the industrial-scale ozonation plant?
- How is the micropollutants removal in the industrial-scale wastewater treatment plant depending on the ozone dose in gO₃ / gDOC?

- How is the decrease in the total number of bacteria in the effluent of the sewage treatment plant before and after the implementation of the industrial-scale ozonation?
- What are the effects of the industrial-scale ozonation plant and the following sand filter on antibiotic-resistant bacteria (ARB)?

The ozonation plant at the Eriskirch wastewater treatment plant was put into operation in January 2020. Until fall 2019, it was only possible to examine the treated wastewater from the sand filter for micropollutants and pathogens without prior ozonation. After implementation of the ozonation, the effect of an industrial-scale system on micropollutants and pathogens will be investigated for the first time.

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Project partner:

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Figure: Wastewater treatment plant Eriskirch
(Source: Wastewater board Unteres Schussental)