

ZeroPM test site: Rastatt

Location: Germany, county of
Baden-Wuerttemberg



About the test site

The soil and groundwater of a large agricultural area is heavily contaminated with PFAS. The PFAS originates from the application of compost contaminated with paper sludge. What is relatively unique, when compared to PFAS contamination from sources such as firefighting training activities, is that the main PFAS present at the Rastatt site are short chain PFAS such as PFBA and PFPeA. These PFAS are attributed to the transformation of precursor PFAA.

The local waterworks in the region of Mittelbaden in Germany uses a filtration method employing activated carbon, or a treatment method employing low-pressure reverse osmosis, to remove PFAS from the water and produce safe drinking water (PFAS free). However, activated carbon filtration has a limited removal efficiency for short-chain PFAS and reverse osmosis is an energy-intensive treatment method. In addition, a concentrated regenerate solution results as product in the case of using reverse osmosis systems for PFAS removal.

ZeroPM is testing two innovative technical solutions for PFAS removal from water at the Rastatt site. The first is the combined use of activated carbon and ion exchange filtration, accompanied by the subsequent electrochemical degradation of the ion exchanger regenerate. The second is adsorption and desorption from activated carbon using polarization which is a cost-effective alternative to thermal regeneration.

For these studies, pilot test plants will be installed and operated in the local waterworks and treatment removal efficiency will be measured. An inventory of infrastructural inputs will be noted and the operational inputs of chemicals and energy will be recorded. This information will be used to assess the environmental sustainability of the alternative processes on a quantitative life cycle basis. The outcomes of this assessment will be available to inform future infrastructure investment decisions.

If the technical solutions to be tested prove to be appropriate and sustainable, the drinking water at the Rastatt site will be cleaned in a more sustainable way and the concentration of PFAS reduced. This will protect human health and the environment from unwanted persistent and mobile substances that may be present in the water.



Activated carbon filtration system used for PFAS contaminated water treatment



The Rauental waterworks – one of the waterworks that will test ZeroPM's technical solutions



The current treatment solution at the Rauental waterworks

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