



Remove micropollutants with granulated activated carbon

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Topics: Wastewater | Pollutants

Currently, the first Swiss wastewater treatment plants are being upgraded with an additional treatment stage for the removal of micropollutants using granulated activated carbon (GAC), including the WWTP at Muri. Eawag provided technical support for the design of the installation and is also investigating unresolved issues.

Since the revised Swiss Waters Protection Ordinance came into force at the beginning of 2016, some Swiss wastewater treatment plants (WWTP) must be upgraded with an additional treatment stage to remove micropollutants from wastewater. One possible process for this is filtration with granulated activated carbon (GAC), for which the aquatic research institute Eawag has produced a planning aid together with the Swiss Wastewater and Water Protection Experts (VSA).

Together with partners, Eawag also provided technical support for the upgrading of the first WWTPs with this process, including the WWTP at Muri. As researchers and engineers explain in an article just published in the journal *Aqua & Gas*, they were able to show during a one-year pilot phase that the GAC process and the two activated carbons tested are well-suited for the wastewater in Muri and meet the specified treatment performance.

They also investigated how the four GAC filter cells planned for the Muri WWTP must be operated in order to be able to use them for as long as possible, thereby saving costs. For this purpose, a program was used to simulate the operation of the plant for the next 20 years. A parallel connection of the filters proved to be most effective.

Rain worsens the cleaning process

During the simulation, however, it also became apparent that during rainfall – simulated in the test by diluting the wastewater with drinking water – the cleaning performance of the filters is lower than in dry weather. The researchers suspect that if wastewater is heavily diluted by rain, desorption of individual substances from the activated carbon could possibly take place, as this is already highly loaded with pollutants. Whether this assumption is correct is currently being investigated in Eawag's experimental facility.

The additional treatment stage in Muri is scheduled to go into operation in about a year. It will then provide practical experience on this process together with other wastewater treatment plants with GAC filtration. This will allow the planning aid from Eawag and the VSA to be further refined and optimised.

Cover picture: Eawag's experimental facility is currently investigating how rainfall affects the cleaning performance of the GAC filters. (Photo: Alessandro della Bella, Eawag)

(in German)

Kessler, M.; Löwenberg, J.; Böhler, M.; Strebel, P. (2022) Neue Reinigungsstufe für die ARA Muri, *Aqua & Gas*, 102(12), 74-79, [Institutional Repository](#)

Aqua & Gas article

Planning aid

Böhler, M.; Joss, A.; McArdell, C.; Meier, A. (2020) Hinweise zur Planung und Auslegung von diskontinuierlich gespülten GAK-Filtern zur Elimination organischer Spurenstoffe aus kommunalem Abwasser. Konsenspapier zum Ergebnis des Workshops vom 9.12.2019 an der Eawag, 5 p, [Institutional Repository](#)

Funding / Partnerships

Eawag Wastewater treatment plants (WWTP) Muri (WWTP)

(in French)

Böhler, M.; Joss, A.; McArdell, C.; Meier, A. (2020) Notice explicative pour la planification et le dimensionnement de filtres à charbon actif en grains (CAG) rétrolavés discontinuellement pour l'élimination des composés traces organiques dans les eaux usées communales. Document de synthèse suite au worksho, 5 p, [Institutional Repository](#)

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<https://www.eawag.ch/en/info/portal/news/news-archive/archive-detail/remove-micropollutants-with-granulated-activated-carbon>