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# **REMOVAL OF ORGANIC MICRO-POLLUTANTS FROM WASTEWATER BY RECOVERED ACTIVATED CARBON FROM LACTATE PRODUCTION AND DRINKING WATER PRODUCTION**

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The removal of organic micro-pollutants (OMPs) from (waste) water is becoming increasingly important. More and more medicine residues have to be removed from household wastewater. Horticultural companies must also extensively purify their waste water from used crop protection agents.

Removal of organic micro-pollutants from water can be achieved using various technologies. It has been shown that fresh (unused) activated carbon is suitable for this. However, fresh activated carbon from coal is not a sustainable source. Therefore, we investigated whether the application of powdered activated carbon, which has already been used in drinking water production or in lactose production, is still suitable for the removal of organic micro-pollutants from municipal and horticultural wastewater.

The aim of this TKI-project is to clarify whether the reuse of powdered activated carbon (PAC) from drinking water production or lactose production is feasible for the removal of organic micro-pollutants from waste water from a technological, economical and sustainable point of view.

First findings are that the adsorption capacity is such that powdered activated carbon from drinking water production is still sufficient to justify the reuse for posttreatment of WWTP effluent and a comparable amount of activated carbon is required compared to fresh carbon (different type). The activity of PAC from drinking water production is comparable with a fresh carbon type (PAC-type which literature states: suitable for wastewater). Results show that the PAC from lactose production has limited adsorption capacity left, as was suspected. However, application in the activated sludge tank is still under investigation. The activated sludge might increase the adsorption capacity by (partly) reactivating the PAC.

As part of the study safety issues, such as desorption of components (PFAS, organics) and safety of dosing, are investigated. Furthermore a LCA study will be conducted to determine the environmental impact of recycled (from drinking water production of lactose production) carbon compared to fresh activated carbon (from coal). A technical and logistical feasibility analysis and an economic evaluation are also part of this project.

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