

ADOX

A next generation adsorption-oxidation process for removal of organic micropollutants from municipal wastewater effluent

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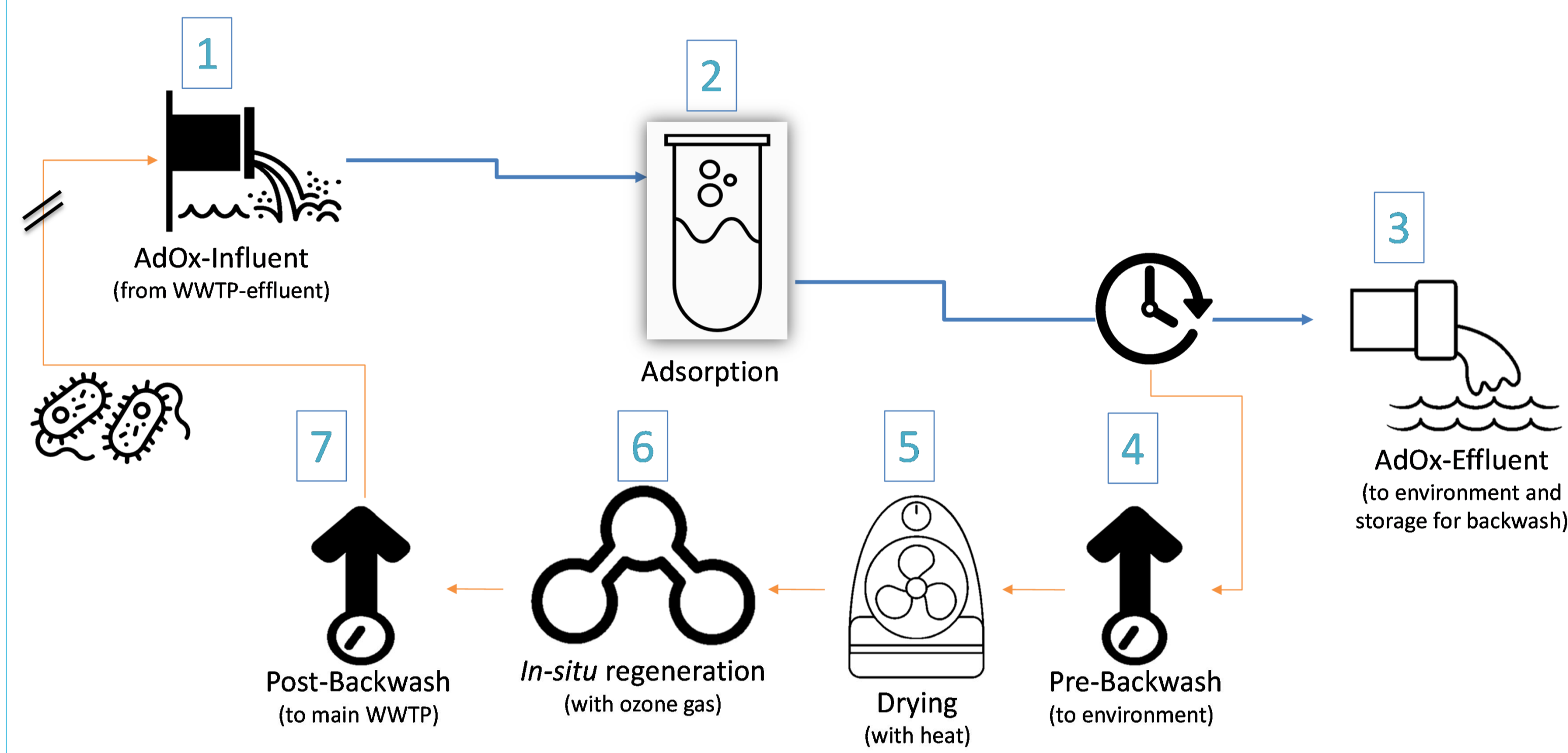
BACKGROUND

Wastewater treatment plants (WWTPs) are in search of sustainable and cost-efficient post-treatment technologies to sufficiently remove organic micropollutants (OMPs), such as traces of pharmaceuticals, personal care products and industrial chemicals.

AdOx offers a solution by integrating adsorption using high-silica zeolite granules in downflow filtration with *in-situ* regeneration using ozone gas. No bromate is formed in the effluent. After 5 years of lab-scale research with convincing results, AdOx has now been scaled up to a pilot plant.

PROCESS SCHEME

The adsorption-regeneration cycle is completed in a week, including 7 days of adsorption and less than 8 hours of regeneration.

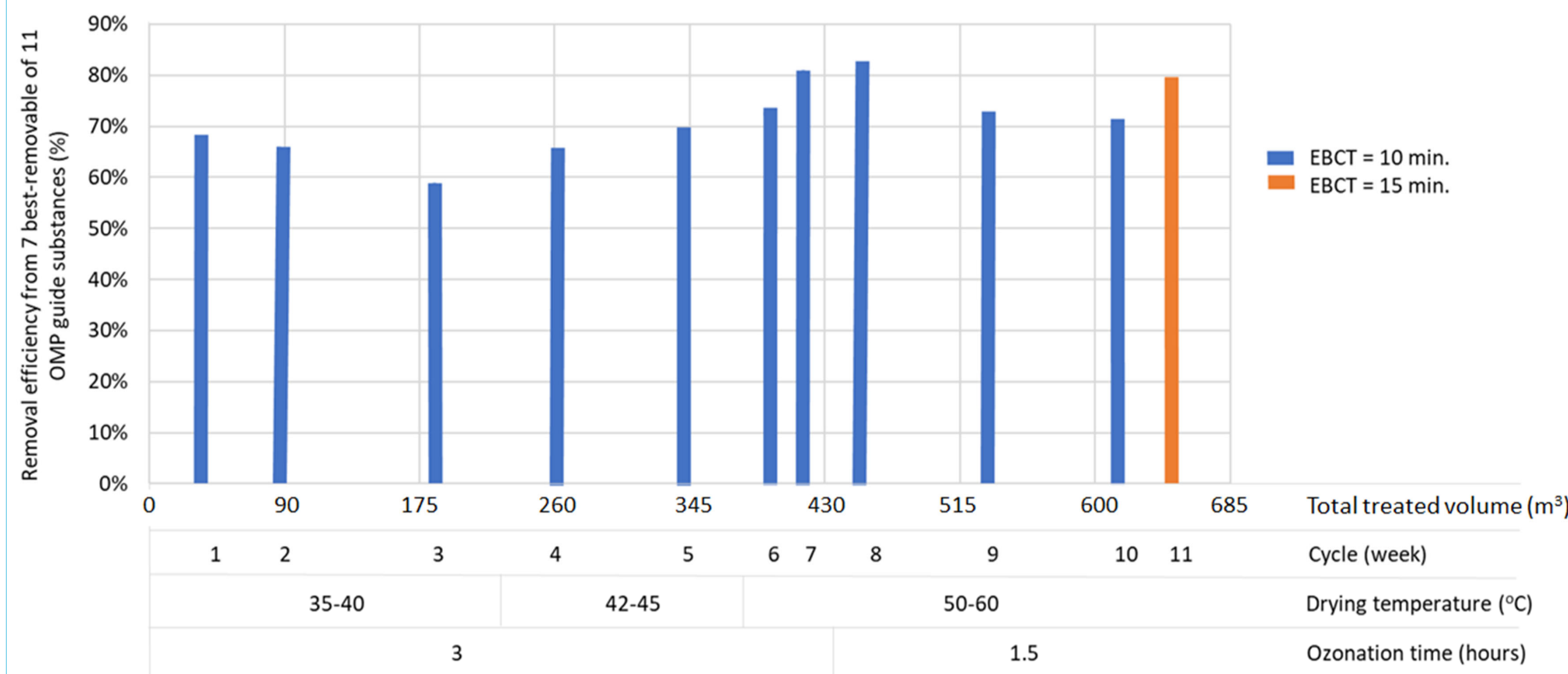


PILOT PLANT SETUP & OPERATIONAL PERIOD

Location : AWZI Leiden-Noord
(Hoogheemraadschap van Rijnland)
Commissioned : January 2023
Sampling period: March - June 2023
Flow rate : 0.5 m³/h
Reactor size :
bed depth = 1 m,
diameter = 0.35 m
column height = 3 m



PERFORMANCE: REMOVAL, CO₂ FOOTPRINT, COST



	Unit	PACAS	Ozone + Sand Filtration	AdOx (EBCT 10 min.)	AdOx (EBCT 15 min.)
Costs	€/m ³	0.05	0.17	0.13 – 0.21	0.15 – 0.27
Overall Removal Efficiency Dutch guide substances	%	70-75%	80-85%	67%	74%

FROM LAB TO PILOT PLANT AND BEYOND

5-year journey to TRL-5.

