



Innovative tools for fighting PFAS

InterSoil 2026

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Re:Think Water

Selective Precipitation Process PerfluorAd®

- Highly PFAS-contaminated waters (even $>3,000 \mu\text{g/L}$) can be treated
- Organic and inorganic co-contaminants generally do not interfere with the treatment process
- Throughputs are scalable for all dimensions
- Treatment of challenging water matrices is possible
- Can be used as part of a treatment train followed by an activated carbon or ion exchange treatment stage

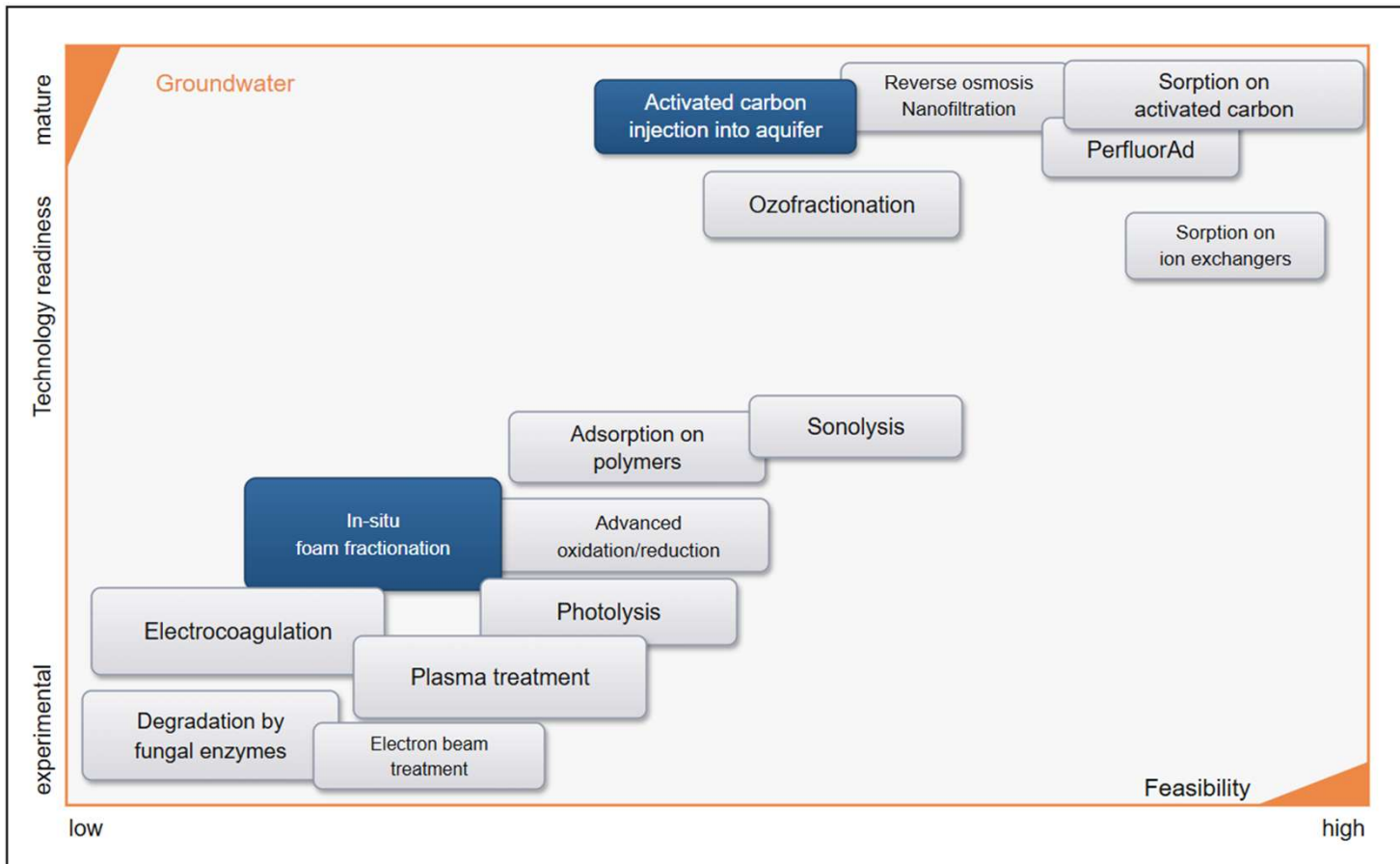


Fields of application of the PerfluorAd®-Technology

- Fire fighting water and AFFF-premix
- Rinsate from AFFF contaminated systems.
- Industrial waste water
- Landfill leachate
- Membrane reject (RO, UF, NF...)
- Ground and runoff water
- Soil wash water



Classification of Treatment Methods



The german guidance document “Remediation Management for Local and Widespread PFAS Contamination”, published by the German Environment Agency (UBA), classifies remediation options for groundwater in terms of their feasibility and stage of development (blue: in-situ applications). The guidance document was prepared by Arcadis Germany GmbH in 2018 and 2019.

This figure has been translated from German by Claude AI on October 1st, 2026

PerfluorAd® - Environmental Aspects

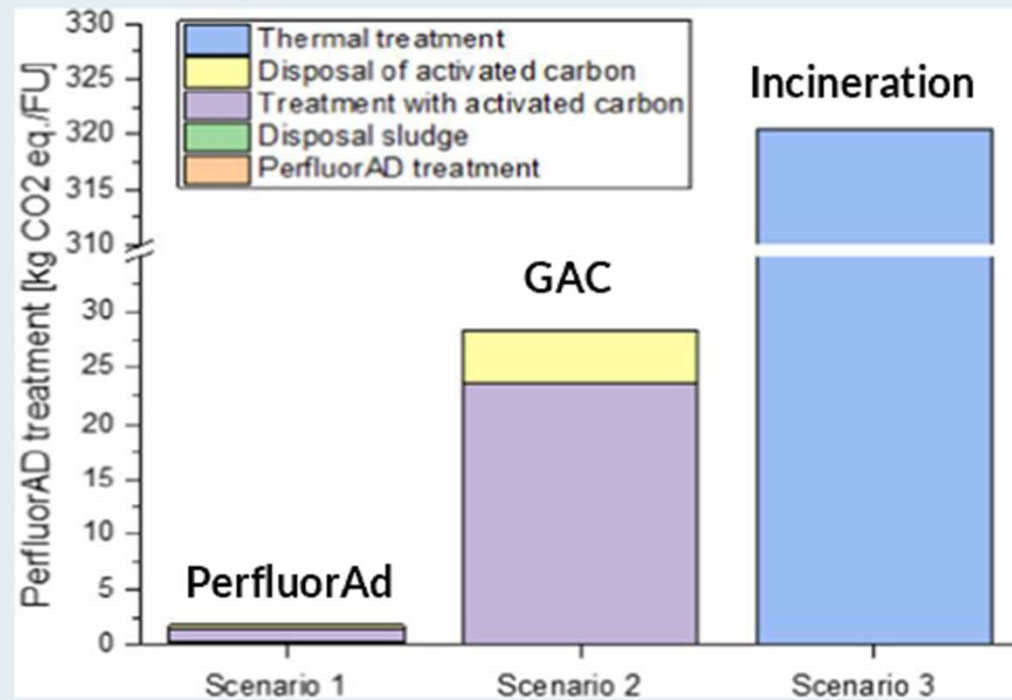
Global Warming Potential

Example:

Contribution to global warming
by treating one cubic meter
AFFF extinguishing water with a
PFAS content of 2.3 mg/L (FU)



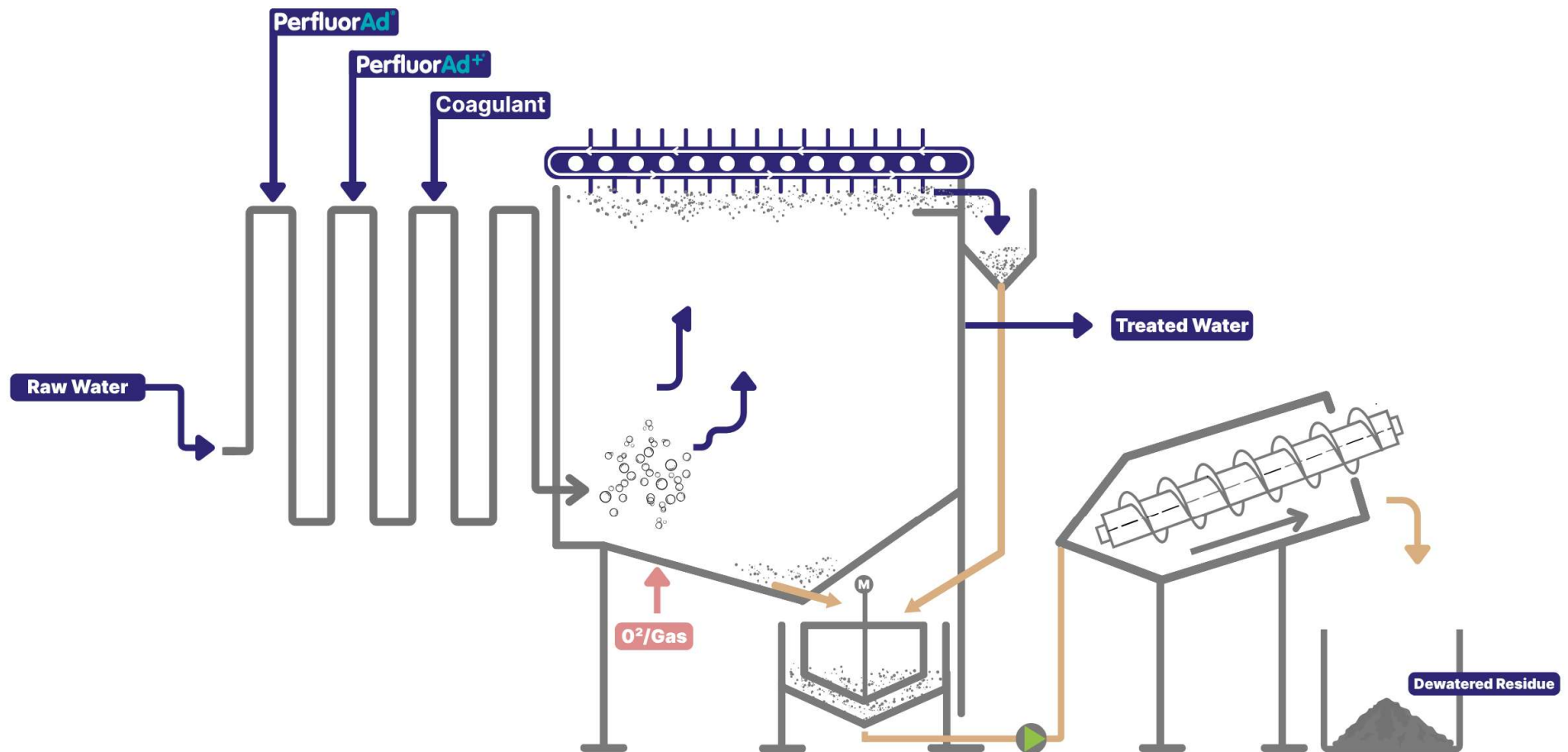
Source: <https://doi.org/10.1002/etc.4803>



Source: Maga et al. (2020)

Example of a PerfluorAd® Application

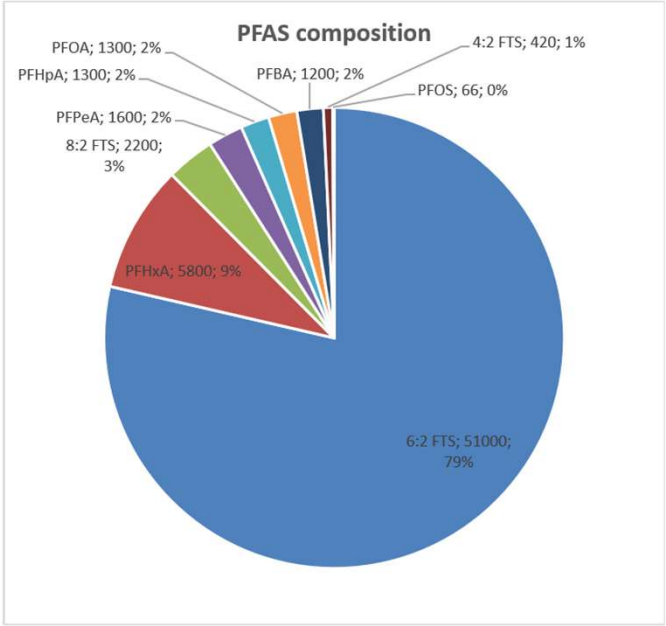
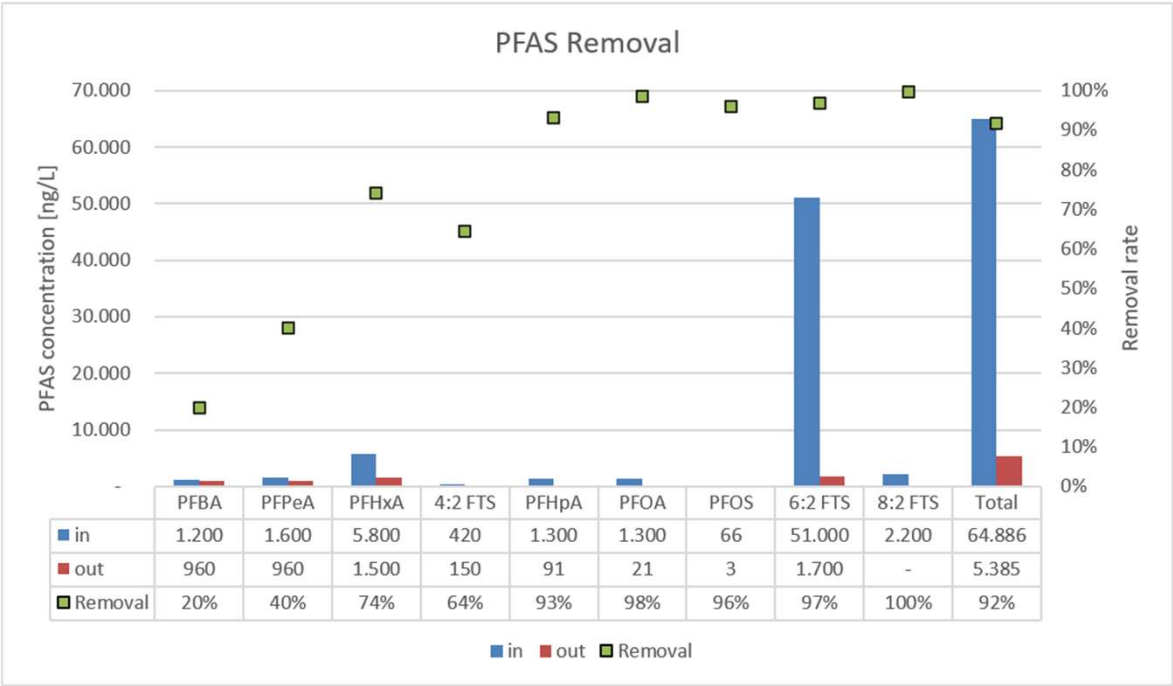
(Dosing into the pipeline, flotation, sludge dewatering)



Firefighting Water from an Incident in the Petrochemical Industry

Treatment of 5000 m³ with a 5 m³/h DAF

Treatment of firefighting water containing predominantly 6:2 FTS
PerfluorAd® is applied at a dosage of 105 ppm, together with 80 ppm
ferric chloride and an additional cationic polymer.
The flocs are separated using a DAF system.



Overall > 90% removal of all measured PFAS components. Close to total removal for long chain PFAS with minor residues.
Reasonable short chain PFAS removal

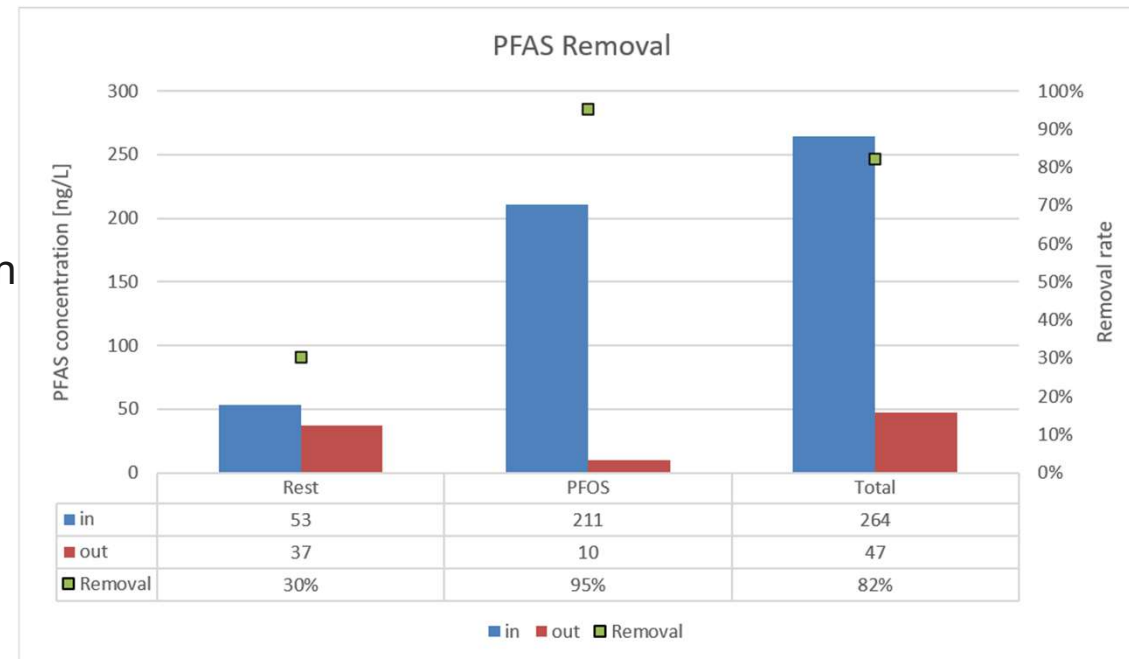
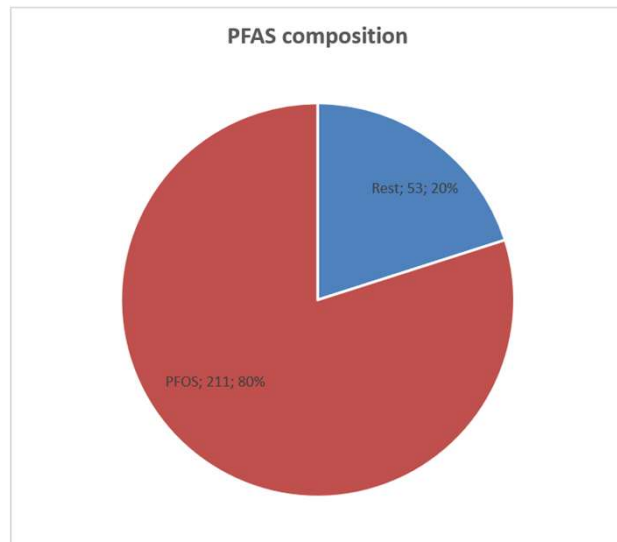
Soil wash project

Full scale for a 150m³/h circular wash water unit

Low PFAS contamination in raw soil ~10-20 µg/kg

PFAS profile in wash water predominantly PFOS

Total integration in existing unit with only dosing station and dosing point upfront the clarifier



Close to full removal of PFOS

Total removal of all measured PFAS >80%

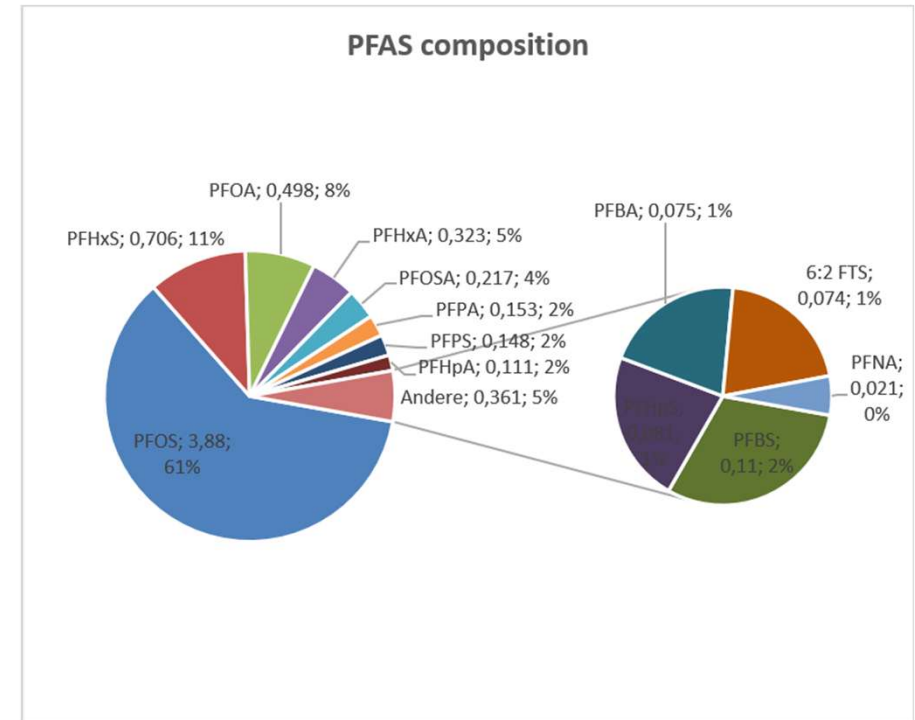
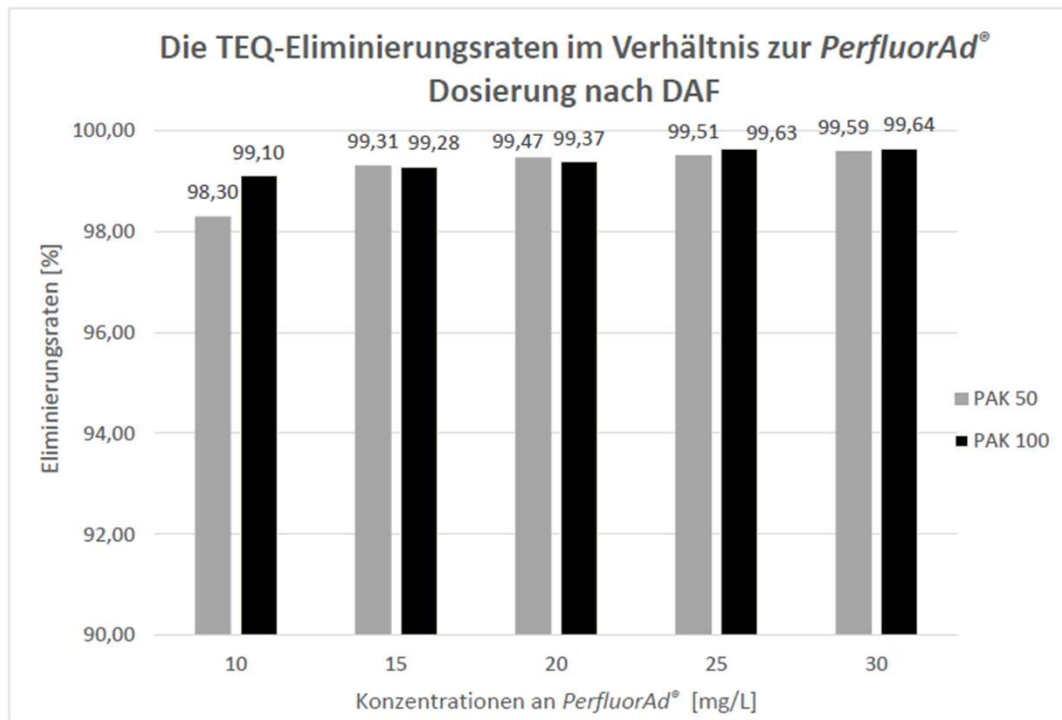
PFAS accumulation in the fines

Ground, Runoff and Construction Dewatering water

Pilot with 1m³/h trial on a former paper industry site

Gathered water streams from ground water wells,
construction pit and runoff collection was treated onsite

Treatment train with PerfluorAd® and „liquid filter“
powderized activated carbon



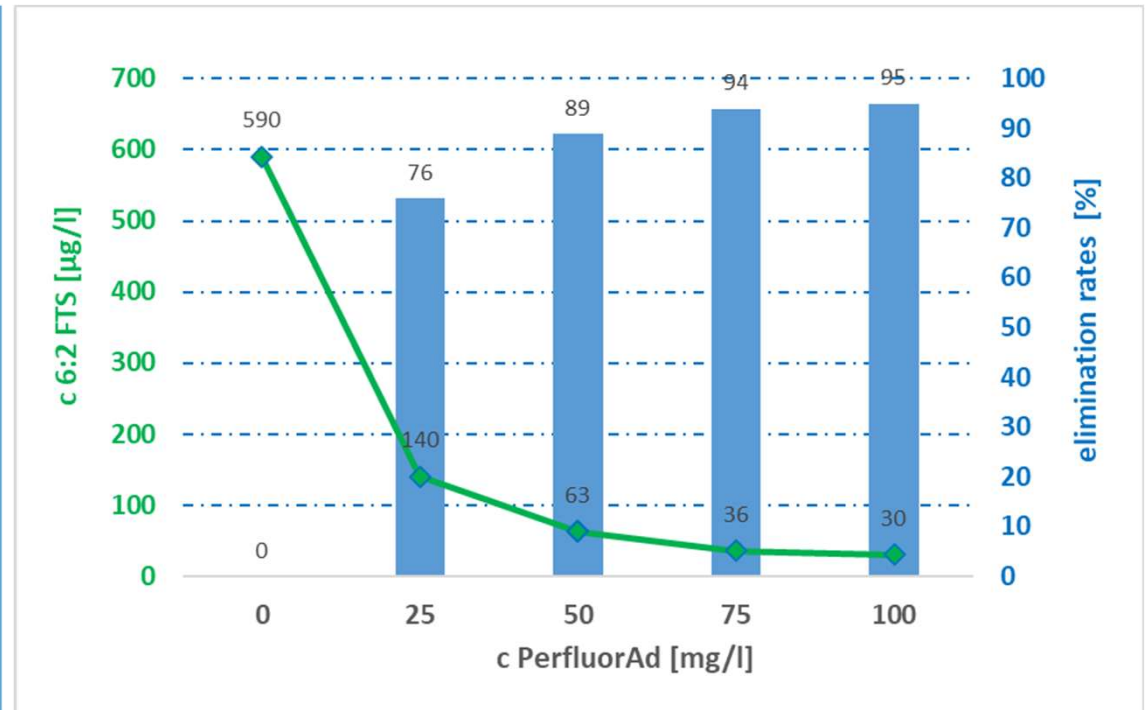
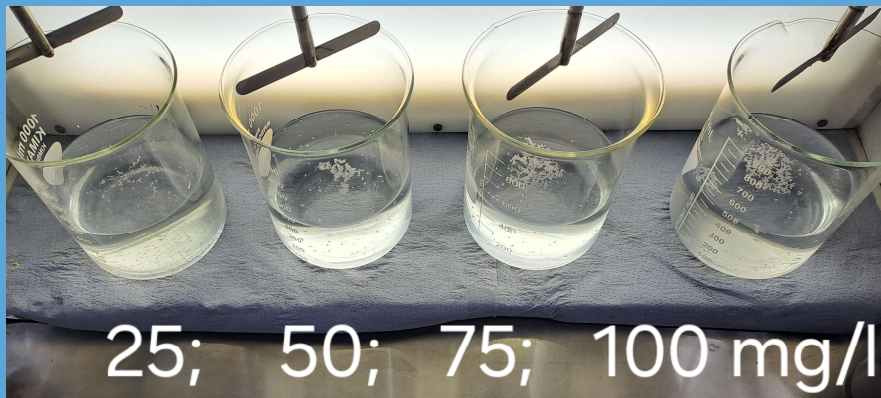
Low dosage of PerfluorAd® in combination with „liquid filter“ was sufficient to remove PFAS and to meet remediation target of 200 ng TEQ / L
! No GAC fixed bed needed for the treatment !

Industrial waste water (bench test)

Process Water from an Electroplating Facility

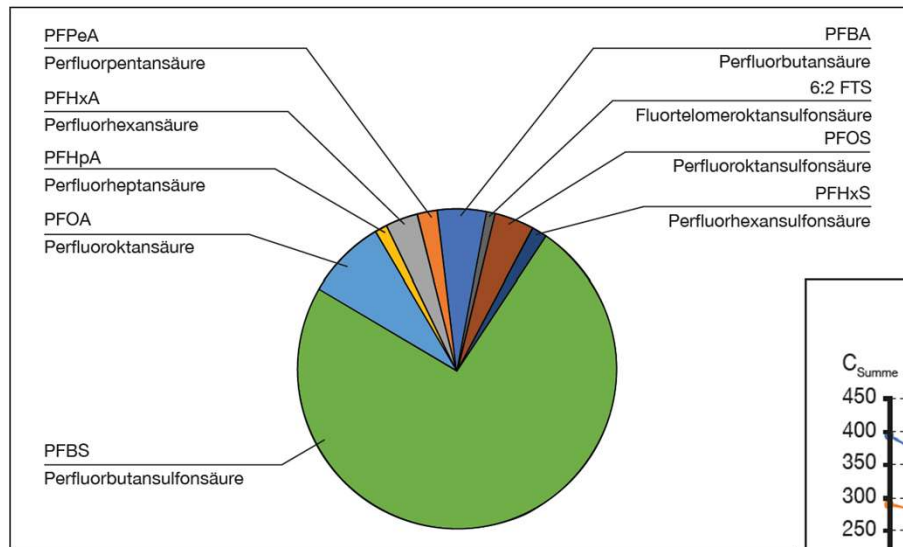
Treatment with PerfluorAd® results in high removal rates of >90%.

- The main PFAS component (>90%) is 6:2 FTS (H4PFOS), with 590 µg/L.
- Conductivity >10 mS/cm

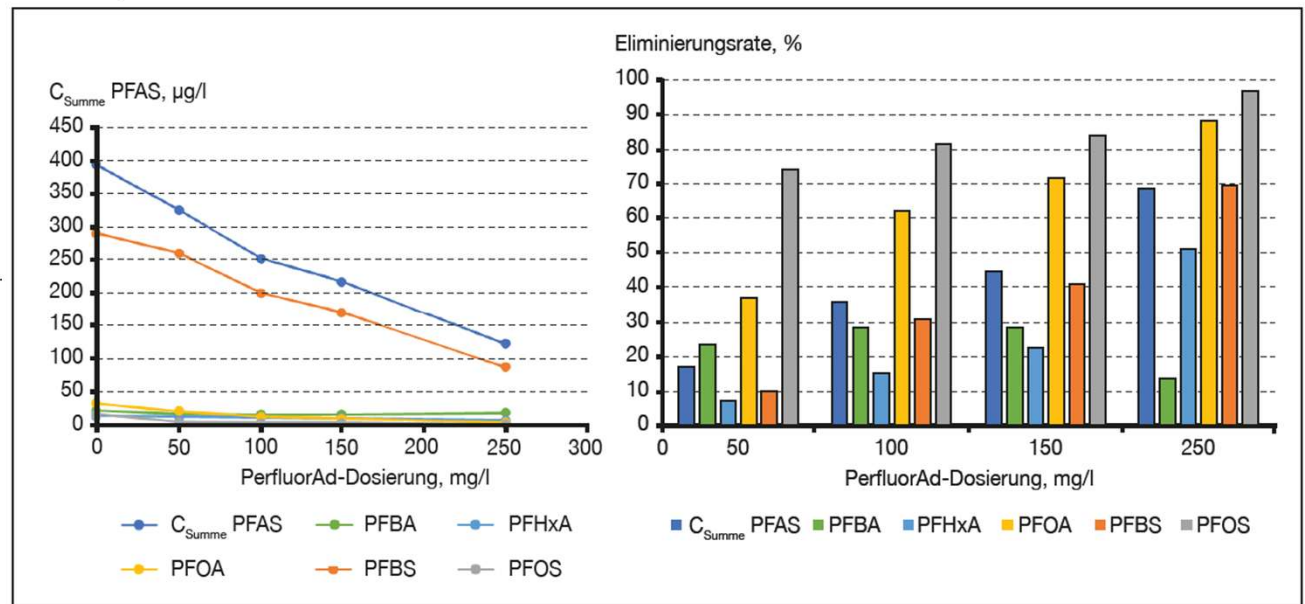


Landfill leachate 1

pH 8; conductivity ~ 20 mS/cm; TOC 870 mg/L

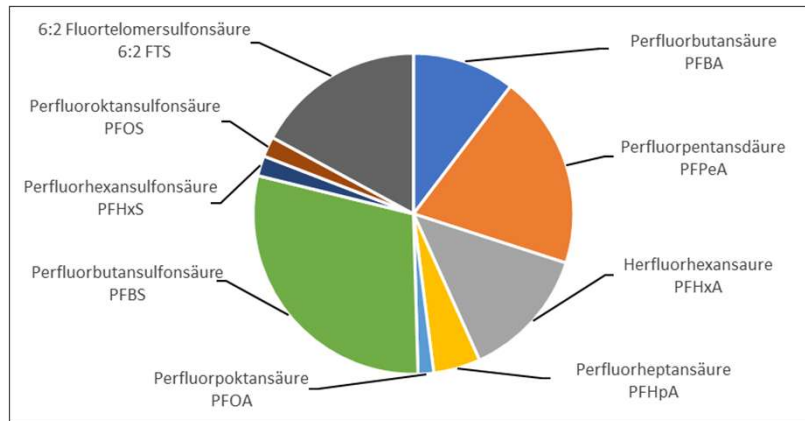


Decrease in PFAS concentrations with increasing dosage of the precipitating agent PerfluorAd®, along with the corresponding removal rates for the sum of measurable PFAS (dark blue) and the main components.

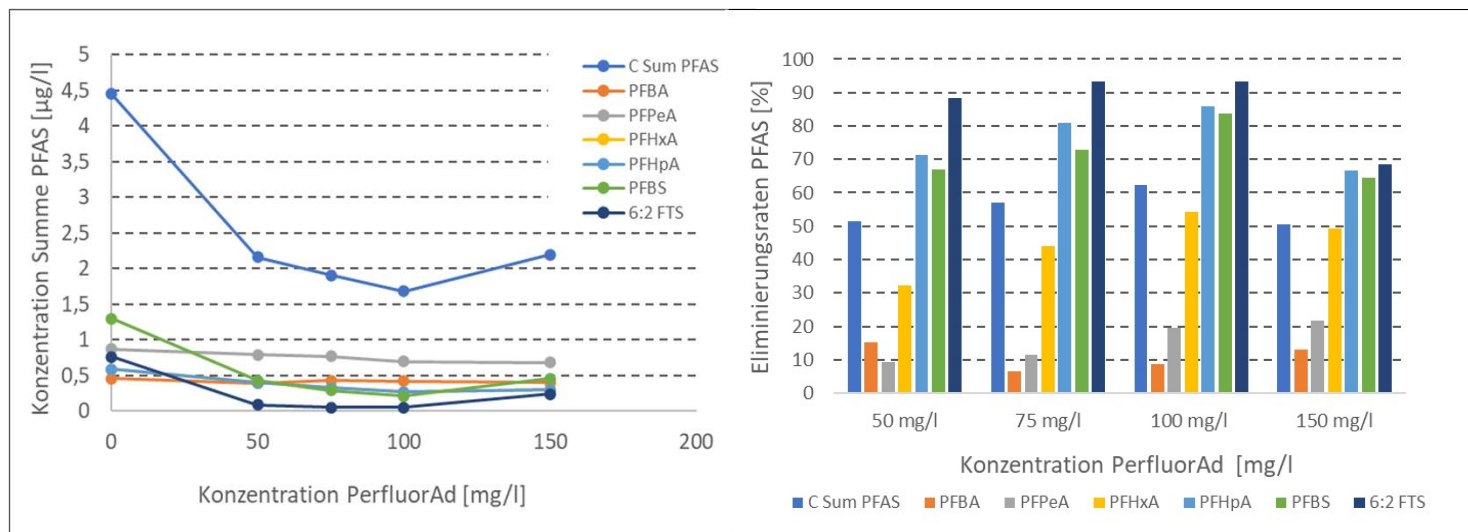


Landfill leachate 2

pH 8; conductivity ~ 20 mS/cm; TOC 100 mg/L



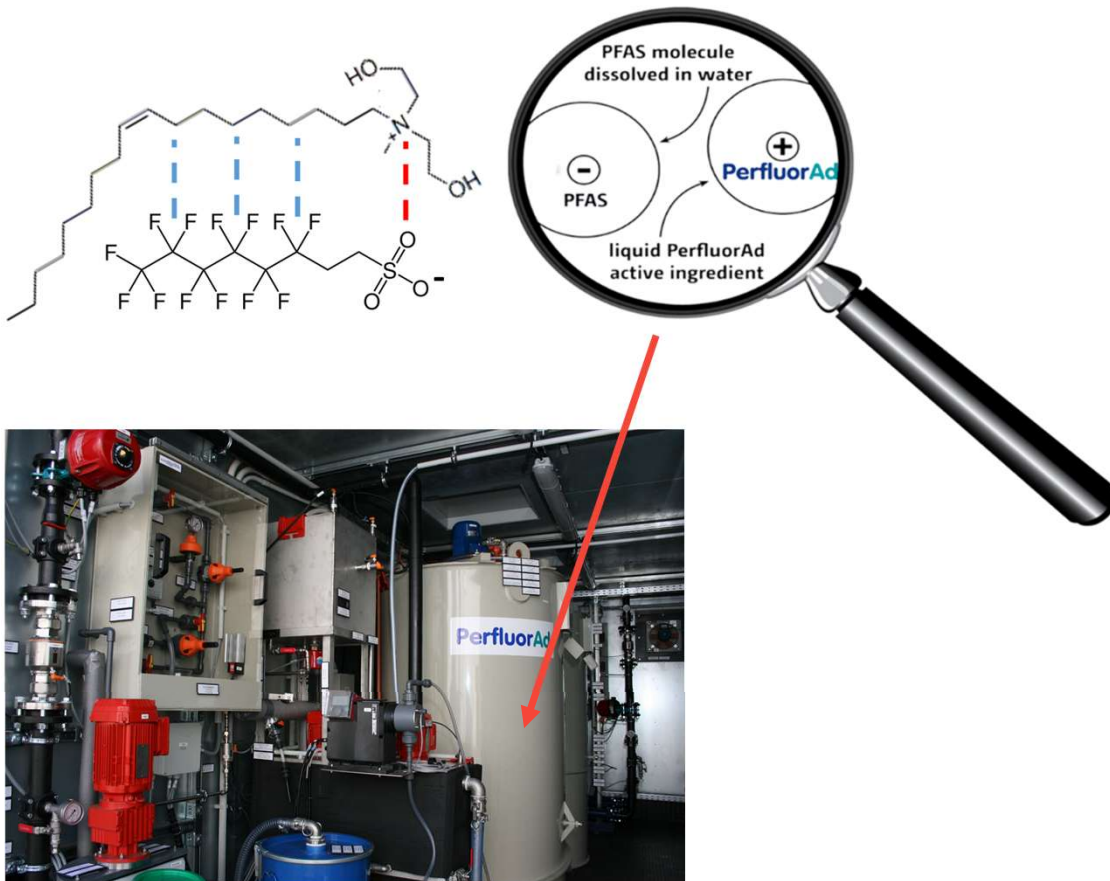
PFAS distribution in the raw water: The total concentration of measurable PFAS compounds is approximately 4.4 µg/L. The main component is PFBS at 1.3 µg/L (30%), while short-chain PFAS account for more than 70% of the total.



Development of PFAS concentrations with increasing PerfluorAd[®] dosage and the corresponding removal rates for the sum of measurable PFAS (blue) and the main components.

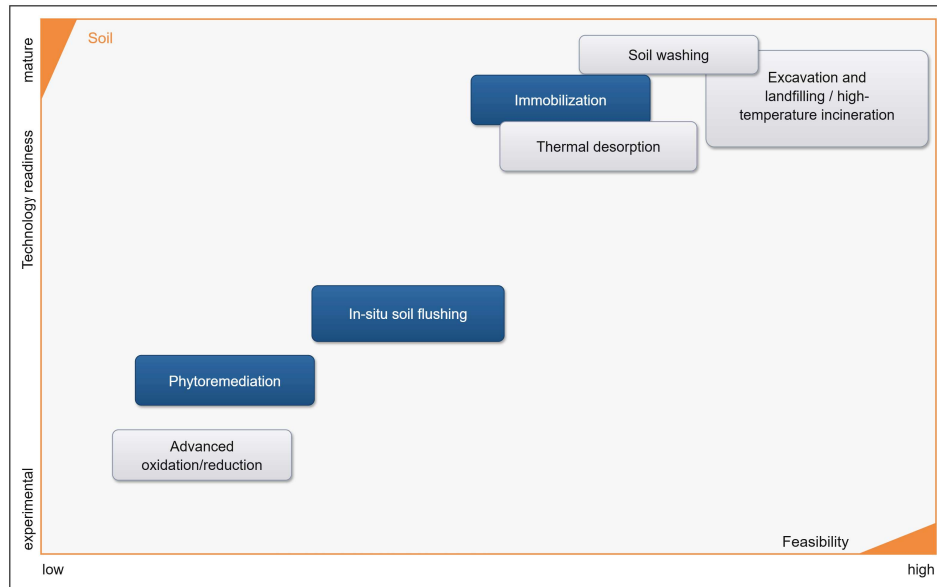
More than 80% of the total PFAS load was removed.

Advantages of the Liquid PerfluorAd® Treatment Agent



- Precipitation of dissolved PFAS through the formation of physical bonds
- Liquid treatment agent, allowing easy and precise dosing
- Chemical dosage can be tailored to the PFAS load and water matrix
- Easy process adjustment to changing water qualities
- Existing customer treatment equipment (precipitation, flocculation) can be utilized
- Biodegradable treatment agent, making it environmentally friendly

Treatment of PFAS in soil



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Powder material, consisting of PAC, Koalin, Aluminium Hydroxide

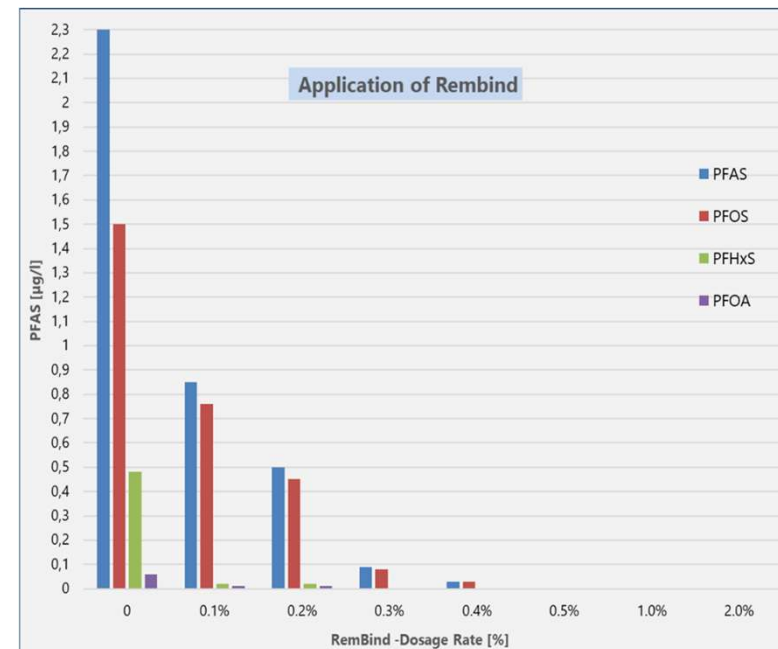
Application by usual mixing techniques

Extensively tested under extreme conditions

Required dosage rate is 0,5-3,0%; depending on requirement.

PFAS is not removed, but it is rendered harmless. It does not migrate into the groundwater and remains immobilized in the soil.

Immobilization is resistant to heat, frost, or wash



Thanks

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