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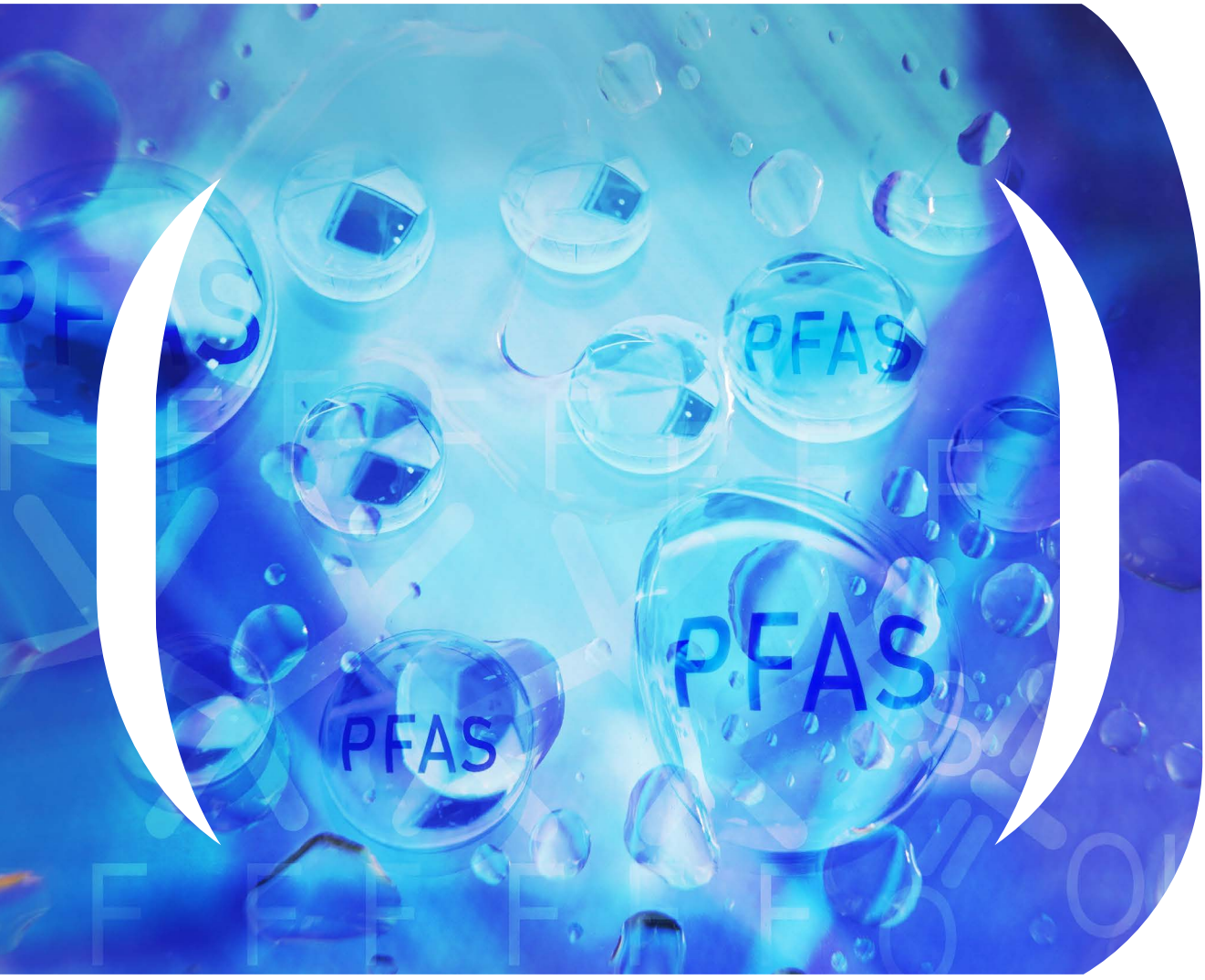
part of saur mission water

PFAS concentration and destruction solutions

Facing a PFAS challenge? Nijhuis Saur Industries (NSI) offers a complete portfolio of PFAS removal solutions, from concentration to destruction, tailored to your specific needs including immediate action with mobile water solutions. Our expert team collaborates with you from the initial assessment to develop a customized, optimal PFAS removal strategy.



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Why PFAS is a problem and why action is needed now

PFAS (poly- and perfluoroalkyl substances) are over 9,000 synthetic chemicals with strong carbon-fluorine bonds. Used since the 1940s in non-stick cookware, textiles, firefighting foams, and more, they persist in the environment. Older compounds like PFOS and PFOA were phased out around 2000, but newer alternatives like GenX remain in use.

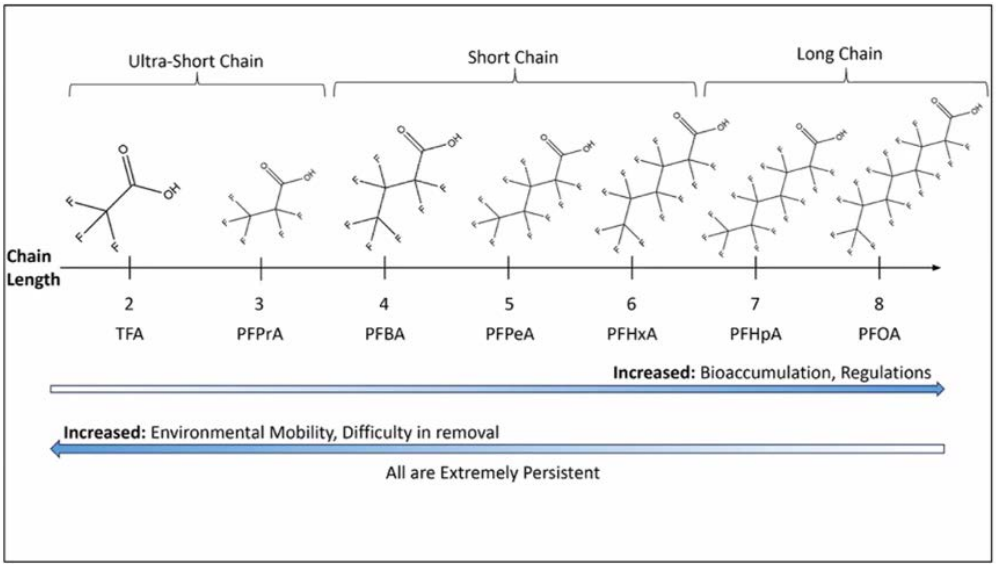
Because they are used in so many everyday products, most people in industrialized counties now have PFAS in their blood. Exposure to PFAS is dangerous for human and animal health.

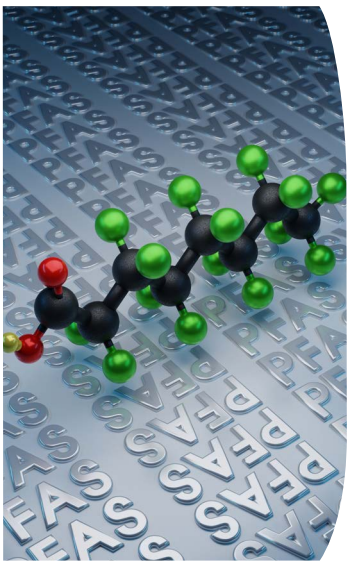
With tightening global PFAS regulations, industries need effective treatment solutions. The EU's potential PFAS ban underscores the urgency. Nijhuis SAUR Industries (NSI) offers innovative, rapid-deployment technologies and global expertise, seamlessly integrating site-specific strategies to ensure compliance while maintaining operations.

Upcoming PFAS legislation means action is now essential.

NSI offers **comprehensive PFAS solutions,** from pilots to full-scale treatment, ensuring you're ahead of the curve and compliant with future regulations.

Contact us today to prepare for tomorrow's PFAS challenges.





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Partner with NSI for PFAS removing solutions

Clean water, clean future: erase PFAS today?

- **Mobile water solutions**

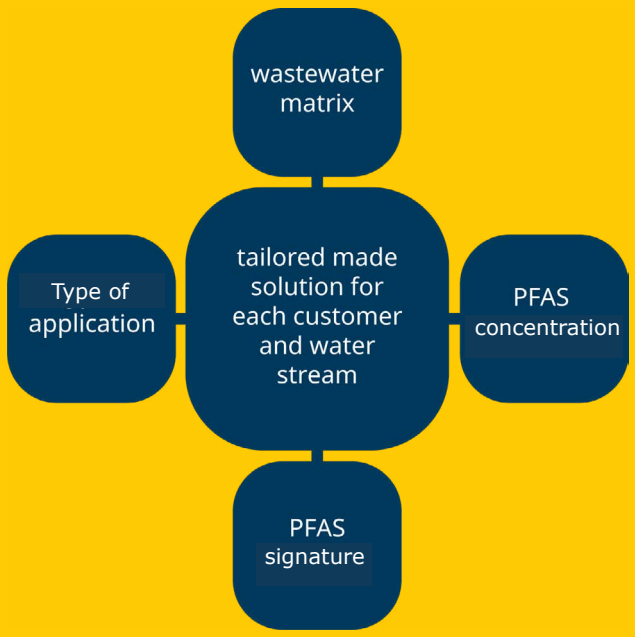
Achieve faster PFAS compliance with Nijhuis Saur Industries' mobile units, delivering efficient on-site treatment to meet regulations with minimal disruption.

- **PFAS treatment as a service**

NSI offers PFAS treatment as a service, managing deployment and operations through flexible contracts. Our care-free rental model let you focus on your business while we ensure compliance.

How our consultancy approach (i-CONSULT) can help you

- What PFAS are in my stream?
- What are the removal options?
- Which solution best fits my site's needs (CAPEX, OPEX, footprint, sustainability, etc.)?



With NSI, it is possible to arrange a pilot or a rental unit

before proceeding with the final investment in PFAS Pilots (available in different sizes)

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- Dissolved air flotation (DAF)
- Ion exchange
- Reverse Osmosis
- Testing ACF
- Capillary hollow fibre nanofiltration
- Activated Carbon filters
- PFAS Destruct Electro oxidation

Technology Solutions

PFAS removal = Concentration + Destruction:
When talking about PFAS removal, it is related to two distinct processes: PFAS concentration, where PFAS are separated from water and concentrated. and PFAS destruction, where the PFAS molecules are broken down into harmless substances. Effective PFAS management often requires a combination of both.

Dissolved Air Flotation

DAF (solid Nijhuis DAF technology)

Dissolved air flotation (DAF)- Coagulation/flocculation for removal of TSS and PFAS from more polluted streams. Dissolved Air Flotation is based on a physical / chemical process, where the injection of air into the water stream with chemical assistance causes the particles/flocks to float to the surface. This floating sludge layer is then automatically and continuously removed by a scraper mechanism.

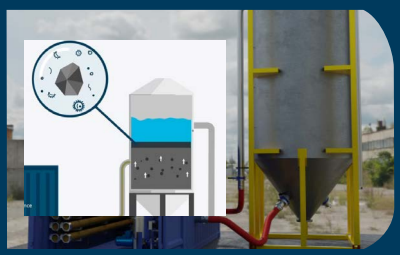
Granular Activated Carbon

CarboPure

Granular Activated Carbon filtration (CarboPure) - Activated carbon filtration is a simple, effective technology to remove PFAS from water. It works well with long chain PFAS, but improvements are being developed for short chain PFAS as well. The carbon saturated with PFAS needs to be disposed of or can also be reactivated to be reused.

Fluidized Activated Carbon

CarboPlus



Fluidized micro activated carbon filtration (CarboPlus)- An easy to operate, small footprint solution to remove PFAS from surface and drinking water.

PFAS concentration is a key step in PFAS removal for several reasons:

- Facilitates destruction
- Reduces disposal costs
- Improves energy efficiency
- Reduces investment costs

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Technology Solutions

Ion Exchange

PFAS Ion Exchange with special resins

Ion exchange treatment with specific resins for removal of PFAS -

Adsorbent technology for PFAS removal. Attracts negatively charged PFAS. Higher removal of short chain PFAS. Lower CO_2 footprint for regenerable resins compared to Activated carbon.

Membrane solutions

NMS-NF or NMS-RO

Hollow fibre Nanofiltration or Reverses Osmosis filtration (NMS-NF / NMS-RO) -

Effective and compact solution to concentrate PFAS both long and short chain. However, the concentration factor is lower than adsorbents such as activated carbon or resins.

Vacuum Foam Fractionation

PFAS FoamFrac

Vacuum Foam Fractionation - PFAS FoamFrac

Selective removal of PFAS through the adsorption at the air-liquid interface of bubbles. Works well for high concentrations of mid and long chain PFAS, as concentration step.

Did you know? Vacuum is applied on the reactors to enhance PFAS removal efficiency and process stability.

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Technology Solutions

Electrochemical
PFAS Destruct

Electrochemical (PFAS Destruct) -

Onsite solution for complete PFAS oxidation, including TFA. This process involves applying and electrical current to electrodes submerged in the contaminated effluent generating reactive species that break down the strong fluorine bonds in pfas. One of the biggest advantages is that it is easy to operate.

Supercritical water oxidation
PFAS SCWO

Supercritical water oxidation (SCWO) - PFAS destruction via SCWO -

Offsite process to destroy PFAS in sludge. Works at temperatures above 374 C and pressure above 221 bar. Under these conditions water becomes a supercritical fluid with unique properties that enhance full sludge and PFAS oxidation.

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Reference examples

PFAS removal

Client: Drinking water company
Objective: Removal of long chain PFAS from groundwater abstracted for potable water production.
Challenge: PFAS contamination was discovered in the groundwater of Rumily, which subsequently appeared in the blood of residents, rendering the water undrinkable.
Solution: Our mobile granulated carbon filters were quickly installed at the drinking water facility. Two distinct types of filters were used, successfully concentrating the stream to meet safe levels for human consumption.
Process details:
- Capacity: 2 filters
- Technology: 18 m³ activated carbon each
Results: Nominal capacity of 160 m³/h with sum 20 PFAS levels reduced from 240 ng/L (avg) to less than 1 ng/L.


Two activated carbon filters for removal of PFAS at drinking water site

PFAS removal

Client: Solid waste company
Objective: Removal of PFOA from leachate at waste disposal site
Challenge: Comply with discharge standards
Process details:
- Treatment full flow rate (10 m3/h), 24/7
-PFOA concentration in ≈ 40 µg/l
- COD concentration ≈ 42 mg/l
- 240 ng/L (avg) to less than 1 ng/L
Technology:
- Modular granular activated carbon. Filters backwashed with treated water
Results: PFOA removal > 99%

PFAS destruction case study

Client: Chemical Company
Objective: Eliminate ultra-short and short chain PFAS from treated wastewater streams.
Challenge: The company faced difficulties in removing ultra-short chain PFAS, a persistent contaminant in their wastewater. Conventional methods proved either inadequate or very costly, prompting the need for an innovative solution.
Solution: Our system, utilizing innovative electrooxidation technology, was installed at the production facility. This system targets PFAS, delivering over 99% destruction efficiency.
Process Details:
- Technology: PFAS Destruct based on ElectroOxidation.
Results: PFAS removal over 99% resulting in significant. reduction of PFAS concentration in wastewater including TFA, promoting environmental compliance and sustainability.

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