

Arcadis

Global PFAS Assessment & Remediation Leader

Arcadis Investor Relations
October 2024

Arcadis PFAS Key Highlights

Arcadis: Global PFAS Assessment & Remediation Leader



>20

Years of
experience



~€100M

Total PFAS solutions
Net Revenues FY'23,
with 20% CAGR¹⁾



80%

Of PFAS net revenues
generated in
North America



>1000

PFAS project
sites to date

¹⁾ Since 2015

PFAS Sources

Forever-chemicals contaminating groundwater, surface water and soil, and threatening human health

PFAS Sources

Description

Main issue

	Industrial sites	Landfills	Wastewater treatment plans	Fire Training / Fire response sites
Description	<p>Manufacturing facilities: textile and leather, paper mills, metal finishers, wire, plating, aviation</p>	<p>PFAS containing (industrial) waste, sewage sludge</p>	<p>Discharge from effluent, leakage, biosolids, byproducts, surface impoundments, consumer goods</p>	<p>Airports, fire training sites, storage tank releases or disposal</p>
Main issue	<p>Surfactants, resins, molds, plastics, semiconductors</p>	<p>PFAS waste disposed of in non-hazardous landfills, leaking PFAS landfills</p>	<p>Wastewater received for treatment is contaminated and sludge has been land applied</p>	<p>Transitioning to fluorine-free firefighting foam</p>

Regulations and estimated market size by 2026

Tightening regulations in US and EU

Sep'24: US EPA¹⁾ announced that manufacturers of PFAS are required to report historical PFAS production volumes, exposures, and hazards to the EPA.

Timeline: The beginning of the data submission period: July 11, 2025.

Sep'24: European Commission has adopted new measures under the REACH²⁾ Regulation – the EU chemicals legislation - to ban the use of two sub-groups of PFAS in consumer textiles, such as rain jackets; food packaging, like pizza boxes; consumer mixtures and in some firefighting foam applications.

Timeline: to take effect after transitional period of between 18 months and 5 years, allowing time for replacement by safer alternatives.

Apr'24: US EPA¹⁾ introduced first national limits on PFAS in drinking water.

Timeline: Regulated public water providers will complete initial monitoring by 2027 and after that install treatment systems by 2029.

Investment Program: \$10B IJA funding for PFAS / emerging contaminants.

Ongoing: European Chemicals Agency (ECHA) is assessing a potential restriction on the entire PFAS group following a 2023 proposal by the Netherlands, Germany, Sweden, Norway and Denmark.

Market Size \$160B

by 2026 for assessment, treatment, clean-up



¹⁾ US EPA: US Environmental Protection Agency

²⁾ Registration, Evaluation, Authorization and Restriction of Chemicals

Arcadis PFAS Offering

At the forefront of a global effort to evaluate and remediate impacted sites and environments

Arcadis PFAS Offering

1. Field assessment and investigation

Locating and determining concentrations of PFAS in soil, ground-, surface-, wastewater



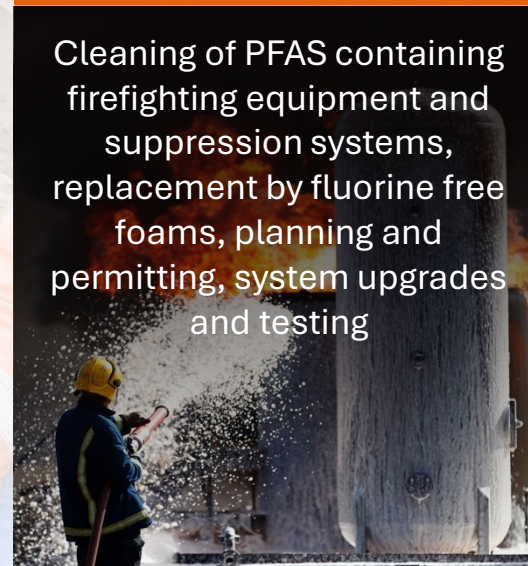
2. Water and soil treatment

Remediating, soil washing, stabilization, solidification



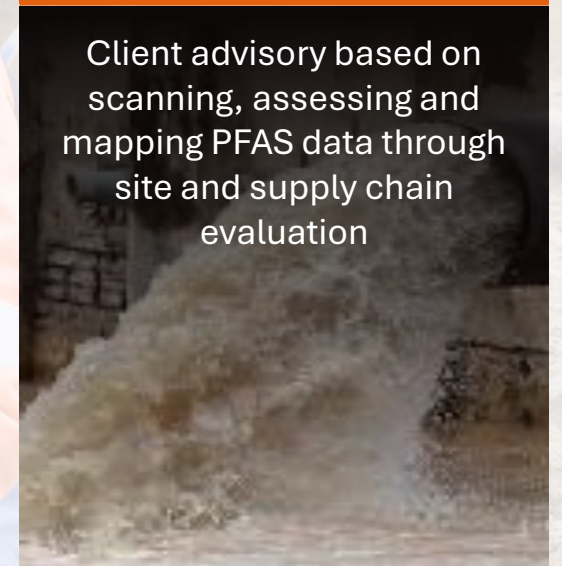
3. Firefighting foam transition

Cleaning of PFAS containing firefighting equipment and suppression systems, replacement by fluorine free foams, planning and permitting, system upgrades and testing



4. Advisory and litigation support

Client advisory based on scanning, assessing and mapping PFAS data through site and supply chain evaluation



Serving federal, defense, industrial manufacturing, oil & gas, chemicals, airport and aerospace clients

Arcadis PFAS Offering

Innovative solutions for accurate low-cost PFAS assessment

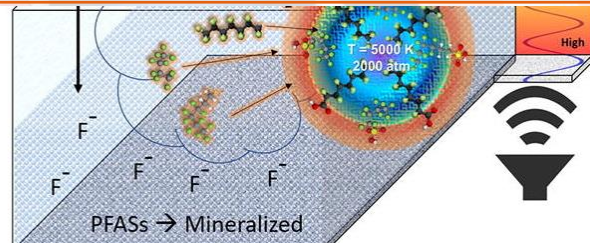
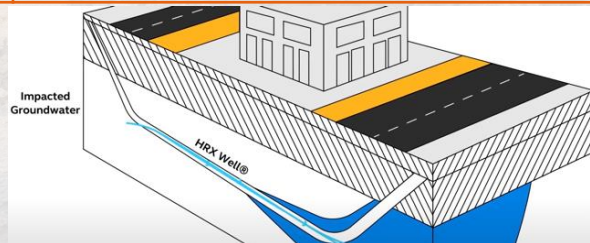
The Sentinel™ Passive Sampler for PFAS	
Solution	Water sampling and assessment
Clients	Federal, defense, industrial manufacturing
Description	Single use sampling device developed for PFAS concentration measurement using an adsorbent to sample PFAS to parts-per-trillion levels in groundwater, surface water and stormwater.
Impact	Provides time weighted mass flux of PFAS, without multiple labor-intensive seasonable field events. Significantly reducing the costs of sampling.



Arcadis PFAS Offering

Pioneering in water treatment technology through patented solutions and collaboration across industry leaders

	Horizontal Treatment Well™ (HRX Well™)	PFAS Destruction – Sonolysis and Super Critical Water Oxidation (SCWO)	Ozone Fractionation Technology (exclusive licensing rights Evocra)
Solution	Groundwater remediation		Industrial sewer & firefighting water remediation
Clients	Federal, defense, industrial manufacturing		Airports, defense, industrial
Description	Uses replaceable cartridges filled with treatment media, installed below surface.	Sonolysis uses high frequency sound waves to create cavitation and extreme heat, and SCWO uses high pressure combined with heat to create supercritical conditions that can destroy PFAS.	A type of foam fractionation in which hydrophobic molecules are separated from a liquid solution using rising columns of foam to remove PFAS from water by concentrating it in a small volume waste stream.
Impact	Significant cost savings thanks to underground application vs. moving water above surface to remediate. Reduces contaminants by 80% after one year.	Portable and deployable to facilities as more sustainable destruction methods compared to sending wastes to commercial landfills or incinerators.	Reduces PFAS to concentrate volume of <1% of the original impacted volume, major water management cost savings.



Arcadis PFAS Offering

Patented biodegradable solution for foam transition

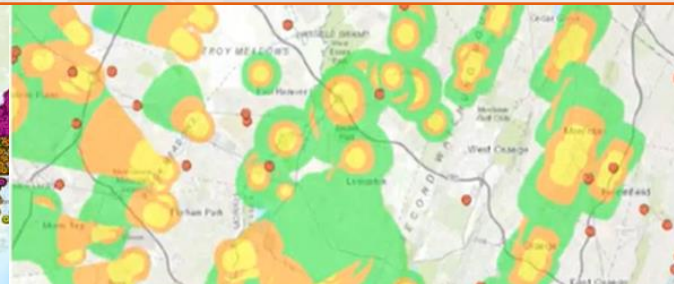
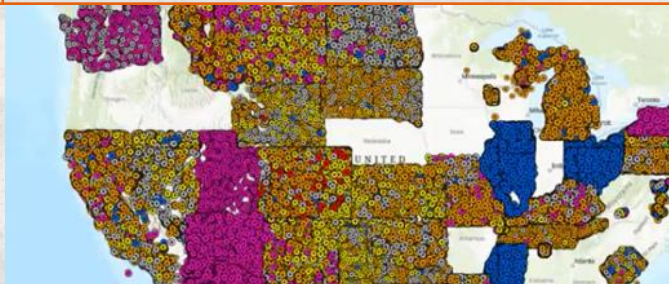
Fluoro Fighter™	
Solution	Firefighting foam transition (cleaning phase)
Clients	Airports, defense, aerospace
Description	Removal of PFAS in foam equipment and suppression systems using Arcadis-developed cleaning agent and replacement with fluoride-free foam. Providing full services in foam transition including planning and permitting, system upgrades and testing.
Impact	Reduces foam transition costs by reducing or eliminating time-consuming re-work, mitigating contamination of replacement foams and avoids widespread component replacement.



Arcadis PFAS Offering

Combining expertise of Arcadis global network of specialists with in-house developed digital tools to offer best in class advisory

	Fluorofinder	PFAS Vulnerability Management Tool	Regulatory Tracker
Solution	Digital tool for supply chain investigation and advisory	Digital tool for site evaluation for soil and water	Digital tool for advisory and litigation support
Clients	Industrial manufacturing	Federal, defense, industrial manufacturing	Multi-state and multinational organizations
Description	AI based scanner of clients' supply chain documents to identify, eliminate and replace PFAS in clients' manufacturing process.	A Geographic Information System (GIS) based tool that accesses public PFAS data for site evaluation to assess potential liabilities, providing a head start on prioritizing actions without sampling or testing.	A client accessed dashboard by Arcadis (one-time or subscription-based), providing international database for country regulations and guidance pertaining to PFAS in all environmental media since 2010 to manage regulatory risks for clients' portfolios globally.
Impact	Cost reductions, decreased (future) liabilities		



Arcadis PFAS Offering

Why clients choose Arcadis

Global know-how and thought leadership

Forming a solid community on scientific forefront of local regulations and PFAS solutions' development.

Proofpoints:

Key founder in setting up a PFAS expertise center Benelux for sharing technical, toxicological, legal and policy information about PFAS with government entities.

Examined 25 sites with the involvement of 15 governments and problem owners, for a concise treatment strategy for governments to deal with PFAS in soil and groundwater.

US DoD¹⁾ funded research for innovative product development.

¹⁾ US Department of Defense

Innovation leader in PFAS

Developing products and techniques in-house and through partnerships & collaborations.

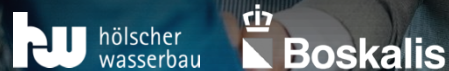
Proofpoints:

Patented remediation solutions¹⁾: HRX Well™, Fluoro Fighter™, The Sentinel™ Passive Sampler.

Partnership¹⁾: Exclusive licensing rights for Ozone Fractionation Technology.



Collaboration: Enabling a full service offering for contaminated soil via washing technology in the Benelux and the DACH²⁾ region.



¹⁾ Please see pages 6-8 for detailed descriptions

²⁾ Germany, Austria, and Switzerland

Integrated approach

Combining our global PFAS expertise with project management and engineering skills, knowledge of environmental science and policy for integrated offerings.

Proofpoints:

Advisory services & investigation for large clients with multiple sites such as US Army and US Army National Guard.

Integrated offering with Arcadis Water Optimization solutions.

Integrating our Global Excellence Centers in sampling and assessment as well as in foam transition for municipal and Federal government clients.

Unique PFAS solutions for remediating water

Patented Ozone Fractionation Technology successfully removes PFAS from industrial sewer and storm water

Impact: Reducing PFAS to concentrate volume of less than 1% of the original impacted volume, major water management cost savings for the client.

Client: Airline Operator | Australia



Unique PFAS solutions for firefighting foam transition

Providing essential environmental studies and remediation services of hazardous waste and munition response site

Impact: Support safeguarding the health and safety of both the US Army's personnel and the installations' surrounding communities.

Client: US Army Environmental Command (USAEC) | US



Please visit arcadis.com/en/investors or use the **QR-code** to download the presentation.



Please reach out to Arcadis Investor Relations for further queries:
ir@arcadis.com