

# ForeverGone

PFAS, often referred to as “forever chemicals,” are creating a widespread and critical problem for safe water across the globe. These persistent substances do not break down naturally in the environment, leading to their accumulation in water sources, wildlife, and human bodies, where they pose serious health risks. As PFAS contamination spreads through ecosystems and into drinking water supplies, the urgency for effective treatment solutions becomes increasingly paramount to public health and environmental safety. Gradiant has developed the industry’s only, all-in-one treatment solution – ForeverGone.

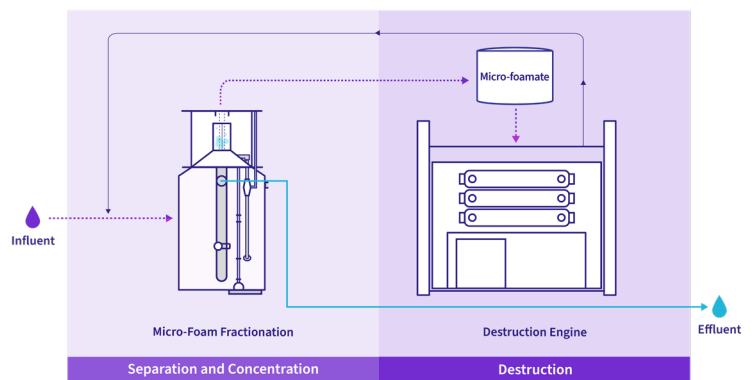
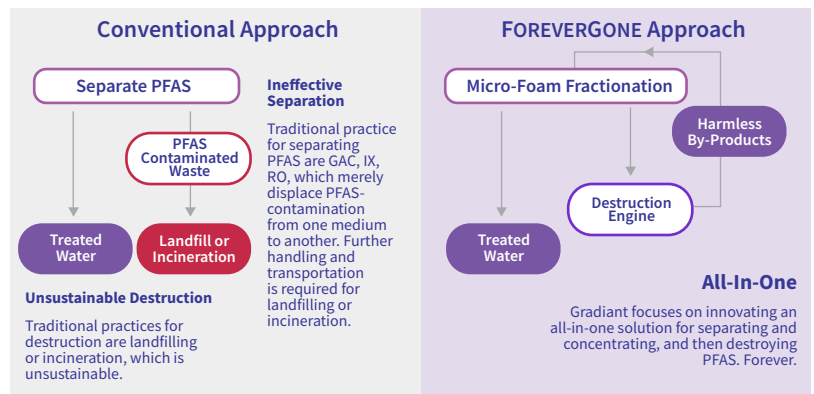


## Overview of the Solution

ForeverGone is Gradiant’s all-in-one solution to remove and permanently destroy PFAS from contaminated water sources.

ForeverGone is more than a name for this innovative technology; it expresses our philosophy on addressing the threat of emerging contaminants. It is not enough to remove PFAS; we must destroy it forever.

Applying our whole-system thinking, we set out to engineer a completely different approach to PFAS remediation where every element of the solution is optimized to work seamlessly together in one end-to-end solution that enables simple, reliable, cost-effective operations. ForeverGone pairs two proven, field-tested technologies - foam fractionation and electro-oxidation - enhanced with Gradiant-Grade innovation to deliver compelling, industry-leading performance at the lowest total cost, and all from a single award-winning pioneer in the water industry.



## Key Benefits



### ENSURED COMPLIANCE

ForeverGone removes a full range of PFAS compounds completely and delivers treated water that meets or exceeds the most stringent regulatory limits (e.g. 4 ppt).



### ADAPTABLE SOLUTION

ForeverGone’s modular design scales easily and adapts to a robust range of feed and product water conditions. It is available as a containerized system or custom-designed for site-specific conditions.



### SUSTAINABLE OUTCOMES

PFAS is completely transformed into harmless byproducts - avoiding the current best practice of landfill or incineration.

## Core Capabilities that Set Gradient Apart



### INNOVATION

Award winning, patented technologies with industry leading performance.



### AI AND MACHINE LEARNING

Machine learning AI algorithms deliver immediate cost and performance improvements.



### PROJECT DELIVERY

A range of contract models that are adaptable to the unique situation and needs of our customers.

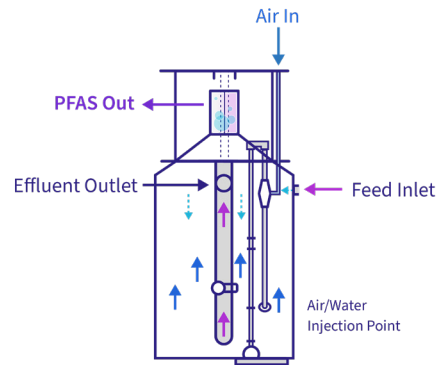


### CURE CHEMICALS

Custom formulae, developed in-house to meet the high-performance specifications our technologies demand.

## Micro-Foam Fractionation

Gradient's Micro-Foam Fractionation technology injects billions of microbubbles into contaminated water to separate and concentrate PFAS into a micro-foamate optimized for immediate destruction – without generating wastes or using harsh chemicals.



### Working principle:

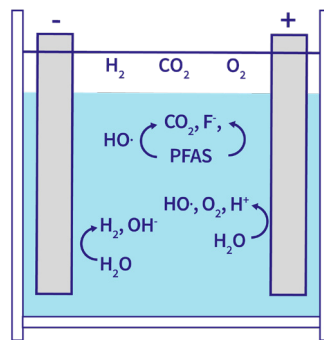
- Air bubbles generated through a venturi injector or microbubble generator
- Air bubbles float upward and surface-active contaminants attached to the air liquid interfaces and generates micro-foam
- Overflowing micro-foam is separated and collected

### Advantages:

- High energy efficiency (~0.5 kWh/m<sup>3</sup>)
- High concentration factor
- High removal efficiency
- Low competition with other co-contaminants

## Destruction Engine

Gradient's Destruction Engine sits alongside the foam fractionation stage and permanently destroys the concentrated foamate by electro-oxidation using proprietary electrodes.



### Working principle:

- Direct oxidation of PFAS compounds at the electrode surface
- Generation of hydroxyl radicals (HO·) for indirect oxidation of PFAS compounds in the bulk water

### Advantages:

- High oxygen overpotential/low activity for oxygen evolution reaction
- Weak adsorber of HO·
- Long-term stability under harsh conditions
- High destruction efficiency (>99.9%)
- Creation of PFAS-free water and harmless byproducts

## Gradient's Innovation Culture

Our award-winning commercial innovation sets us apart in the industry. We rapidly translate innovations from bench scale to commercialization that support our mission to deliver water treatment solutions that meet the evolving needs of our customers. Our R&D advancements, whether equipment or chemical, are thoroughly validated in Gradient's global laboratories and field-tested before deployment. Customized bench- and pilot-scale testing is used to demonstrate proof-of-concept and cost optimization — by the same teams that develop our leading-edge commercial technologies.

### HAVE QUESTIONS?

Learn more about our technology at <https://www.gradient.com/solutions/pfas-and-contaminants/>

Contact Gradient today at [gradient.com/contact](https://www.gradient.com/contact)



LEARN MORE AT  
[WWW.GRADIANT.COM](https://www.gradient.com)

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