

Treatment of PFAS in soils, sediments and water



Enviropacific achieve >99% reduction in leachable PFOS, PFOA and other major PFAS from impacted soils, sediments and water.

About Enviropacific

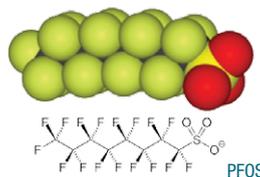
Enviropacific is an Australian owned industry leader providing integrated environmental solutions, encompassing remediation, petroleum, civil, energy and waste services.

We offer a broad range of services to government, private and industrial clients. Our national network allows us to provide tailored local services to clients supported by the wide ranging experience of our in-house industry experts.

We employ safe and smart solutions for every project, backed by our recognised ISO accreditations, including certification by the Australian Federal Safety Commissioner.

Enviropacific provide cradle to grave compliant and risk free environmental contracting solutions.

PFAS in soils, sediments and water



Emerging contaminants PFOS (perfluorooctane sulfonate), PFOA (perfluorooctanoic acid) and other per- and poly-fluoroalkyl substances (PFAS) are toxic, persistent and bioaccumulate in the environment.

As a result, in 2009 PFOS was included in the Stockholm Convention on persistent organic pollutants.

Fire-fighting foams (also known as aqueous film-forming foams - AFFFs) are the most commonly known source of PFAS. Other sources of PFAS include water repellents, fabric protectors, carpets, cookware, food packaging and many other common industry products.

Enviropacific's PFAS treatment capabilities

Recent treatment trials conducted by Enviropacific's Research, Innovation and Technology Development Group on impacted soils, sediments and water from numerous sites across Australia, have demonstrated highly effective chemical immobilisation and/or thermal desorption of all 20 commonly observed PFAS analytes. **PFOS and PFOA were reduced by >99% and all minor PFAS were reported as below the laboratory limit of reporting (LOR).**

The technologies are straightforward, cost-effective and can be readily up-scaled to commercial application using mobile treatment equipment owned and/or designed by Enviropacific.

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Commercial full-scale application

EnviroPacific's soil and water PFAS immobilisation technologies involve carbon-based chemical adsorption treatment. Our thermal treatment plants are based on direct-fired thermal desorption. All of these technologies are ready to be applied at commercial full-scale.

Water treatment

EnviroPacific recently completed full-scale water treatment of PFAS at RAAF Williams Point Cook VIC, where water was treated at 5 L/s. We also recently commissioned the construction of a 1.2 ML/day capacity water treatment system to treat water originating from a large-scale groundwater PFAS plume in a sandy aquifer in NSW. This system is currently operational and has already treated approximately 110 ML of contaminated groundwater to achieve PFOS and PFOA concentrations of <0.01 µg/L. The treated water is being reinjected into the aquifer within the vicinity of the dewatering site.

The water treatment technology and equipment are well established at EnviroPacific and we can offer water treatment equipment designed to treat PFAS contaminated water at rates of >10 L/s. This equipment is largely containerised allowing a treatment system to be established and operational on-site in under 2 weeks.

Soil immobilisation treatment

The equipment used for the soil treatment process is our Hitachi Soil Recycler, which EnviroPacific has owned since 2009. The Soil Recycler is a track-mounted pug mill specifically engineered to provide high shear mixing for treatment of contaminated soils and sediments. The machine efficiently adds a variety of reagents with high accuracy to ensure adherence to specific immobilisation approvals and conformance testing.

The throughput for the Soil Recycler ranges from 50-200 tonnes/hour, depending on soil type. Treatability trials would be undertaken on site-specific wastes in order to optimise reagent usage.

EnviroPacific have undertaken the same soil treatment process on over 2000 tonnes of benzol(a)pyrene contaminated soil under an EPA approval, in this case obtaining a hazard reclassification for landfill disposal.

Soil thermal treatment

EnviroPacific have comprehensive thermal treatment capabilities. Recent thermal treatability trials conducted by EnviroPacific on PFAS impacted soils have demonstrated highly effective contaminant removal of all 20 commonly observed PFAS analytes, with >99.9% reduction in PFOS (from 172 mg/kg to 0.004 mg/kg), and PFOA (from 2.73 mg/kg to <0.0005 mg/kg).

Treatment trial results

Water treatment results

	PFOS	PFOA
Untreated (µg/L)	57.1	0.53
Treated (µg/L)	<0.02	<0.02
% Reduction	>99	>96

Soil treatment results (immobilisation)

	PFOS*	PFOA*
Untreated (µg/L)	47.6	1.85
Treated (µg/L)	<0.02	<0.02
% Reduction	>99	>99

*Australian Standard Leaching Procedure (ASLP)

Soil treatment results (thermal)

	PFOS	PFOA
Untreated (mg/kg)	172	2.73
Treated (mg/kg)	<0.004	<0.0005
% Reduction	>99.9	>99.9

Note: other PFAS in the suite of 20 commonly observed compounds were reduced to <LOR.