REGENESIS®

Stopping PFAS at the Source

Focused PFAS source zone treatment service featuring SourceStop

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REGENESIS offers the most advanced technology and soil fixation processes to immobilize PFAS (i.e., Per-and polyfluoroalkyl substances) at the source, effectively halting their movement in groundwater away from source zones to prevent PFAS exposure risk.

SourceStop™

REGENESIS' source zone treatments for PFAS incorporate SourceStop™, a proprietary technology comprised of micron-scale (<2 µm) colloidal activated carbon (CAC) applied to PFAS source zones in liquid form. Developed by REGENESIS' team of Research and Development scientists, SourceStop uniformly coats and permeates soils, resulting in substantially reduced PFAS leaching compared to other sorption materials used in direct mixing applications.

REGENESIS Remediation Services

REGENESIS' PFAS source treatments are designed and applied by REGENESIS Remediation Services (RRS). RRS brings more than a decade of soil remediation expertise to immobilize PFAS quickly and effectively at their source and prevent future exposure risk.

Background

Treating PFAS sources to reduce exposure risk

The identification of PFAS-impacted groundwater plumes and source zones continues with increased frequency. In many cases, these 'forever chemical' source zones contain a high concentration of PFAS in shallow soils, which contribute to the development of groundwater plumes and create PFAS exposure risk to potential receptors.

PFAS-impacted soils are expensive to dispose of or incinerate, and acceptance of either approach decreases as certain PFAS become regulated as hazardous substances by the US EPA. Groundwater contamination emanating from these source zones is difficult and costly to treat. Due to PFAS' persistence, mobility, and actionable clean-up levels in the parts per trillion, these soil source areas can sustain PFAS groundwater plumes for many decades.

REGENESIS PFAS source zone treatments are applied to vadose soils at the source to prevent PFAS plume formation resulting from precipitation infiltration and soil leaching. They may also be applied to the capillary fringe and upper saturated zone to facilitate a stable or declining plume condition, a sought-after element for managing a PFAS plume under a Monitored Natural Attenuation (MNA) remedial strategy. These PFAS source treatments, featuring SourceStop, reduce contaminant flux into groundwater and are synergistically combined with PlumeStop® barriers downgradient of the source to halt plume migration and minimize PFAS exposure risk.

PFAS Source Zone Remedial Applications

Mitigating PFAS source zones is key to minimizing PFAS exposure risk

PFAS has been used in manufacturing and firefighting efforts for decades, resulting in potentially hundreds of thousands of PFAS release areas worldwide, where high levels of PFAS in soil and groundwater reside as long-term sources of groundwater contamination. These source areas include aqueous film-forming foams (i.e., AFFF) fire training sites, PFAS bulk chemical spill locations, Class B Firefighting System testing pads, oil and gas development sites, and metal-fume-suppression stations, to name a few. When left untreated, they can lead to extensive and persistent PFAS-contaminated groundwater plumes, posing unacceptable risks to human health and the environment.

PFAS' persistence and mobility allow them to travel far and wide in groundwater, resulting in plumes extending over long distances (i.e., miles/kilometers) and persisting over long timeframes (i.e., decades) if left untreated. Where possible, identifying PFAS source areas and quickly remediating them is essential for mitigating and effectively reducing long-term PFAS exposure risks and liabilities.

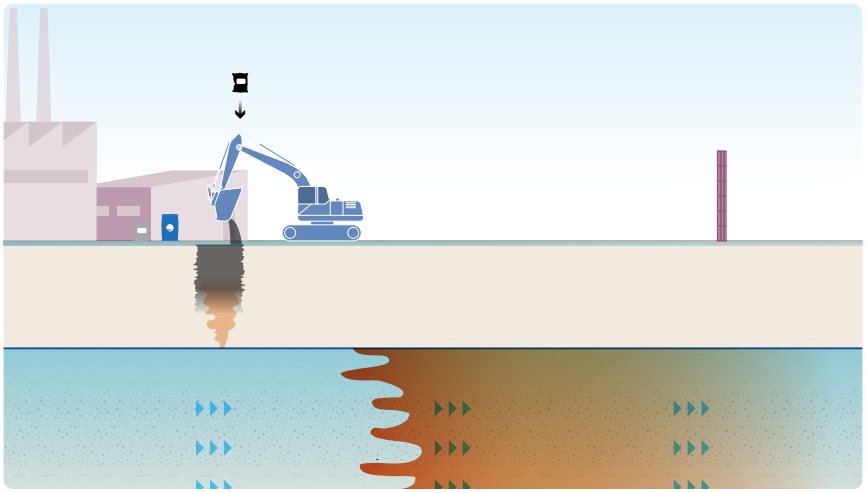
Flexible treatment options tailored for each site

REGENESIS' source treatments provide a targeted and holistic approach to the different media of concern within a PFAS source zone and the different elements of a PFAS plume risk mitigation strategy.

Soil source treatment

REGENESIS provides *in situ* sequestration and stabilization of PFAS impacted soils in the source area. This is completed by mixing a site-specific blend of amendments into the target soils, dramatically reducing the leachability of PFAS attached to the soils and minimizing precipitation infiltration while preventing further vertical migration.

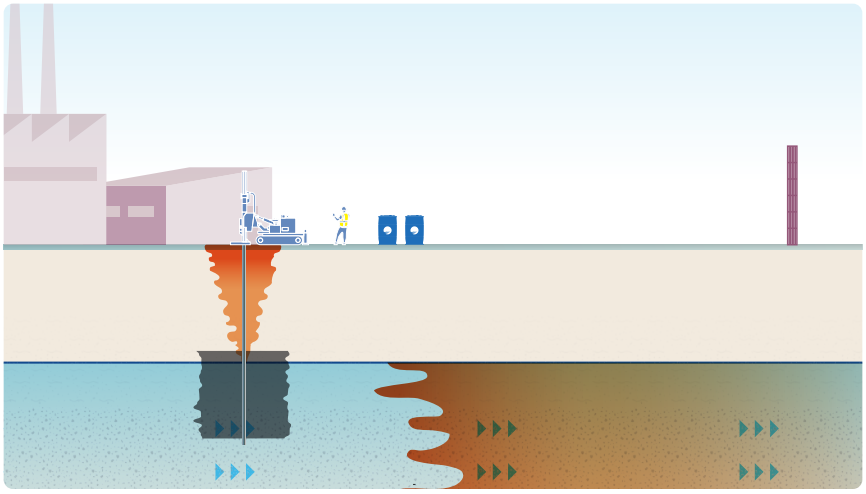
In addition to the blend of amendments used, SourceStop™ colloidal activated carbon (CAC) is applied to penetrate into the underlying soils and coat vertical flow paths to capture any residual contamination. The innovative treatment enhances the natural attenuation (ENA) of the plume and avoids impact on downgradient receptors. The treatment is a sustainable, passive solution safely and easily applied requiring no ongoing operational costs, and generating no waste.



In situ mixing of amendments in the vadose zone soils with SourceStop applied to base.

Groundwater source treatment

SourceStop is injected under low pressure into the groundwater and capillary fringe at the PFAS source zone, converting treated aquifer materials into an *in situ* purifying filter and rapidly removing high levels of PFAS from the groundwater.



In situ injection of SourceStop in the groundwater and capillary fringe.

Combining source zone treatments with downgradient plume treatments

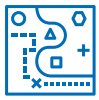
Site objectives often require groundwater remedial targets to be met in a short timeframe and with added protections against PFAS exposure and liability risk. PFAS source treatment remedies can be combined with PlumeStop barriers installed downgradient of the source to quickly achieve these objectives. PlumeStop® barriers are backed by a PlumeShield™ warranty program to provide certainty and peace of mind.

Completing a PFAS Source Zone Treatment on your Site

Working with REGENESIS

Step 1 - Analysis

A soil sample is taken and tested in the REGENESIS laboratory using a blend of amendments, including powdered activated carbon, soil binding agents (e.g., Portland cement), and SourceStop.



Step 2 - Design

Upon receiving site data, REGENESIS will develop a soil fixation process design to ensure optimized permeability reduction and PFAS fixation within the target source zone. Site-specific soil sampling and amendmentoptimization performed by the REGENESIS laboratory may be included. The resulting design will specify the volume and optimum placement of SourceStop and the amount and type of fixation additives to be mixed into source zone soils.

Step 3 - Application

Implementation of the source zone treatment is conducted by RRS under the direction of REGENESIS' soil mixing experts.

Step 4 - Performance

Following treatment, the source area contamination is immobilized, and the PFAS groundwater plume, if present, attenuates.

Benefits

Complete, rapid, and sustainable results delivered cost-effectively

SourceStop, a high-concentration, micron-scale colloidal activated carbon, is utilized on REGENESIS' PFAS source zone treatments, benefitting your project in numerous ways.

Immediate, cost-effective and long-lasting treatments

Immediately reduces PFAS leaching potential from source zone soils and groundwater. Sustained treatment minimizes PFAS exposure risk over the long term. SourceStop is significantly more effective at reducing PFAS leaching than other direct-mixing sorptive materials.

Substantial cost savings

Remedies can be implemented at a fraction of the cost of alternatives like soil excavation and removal, resulting in dramatic project cost savings.

Highly flexible

Flexible approaches are employed to provide the most cost-effective solution tailored for each site. Materials are applied using a range of direct mixing or injection methods.

Sustainable, with no hazardous waste streams generated

REGENESIS PFAS source zone treatments are sustainable, avoiding the generation of hazardous waste streams, energy consumption, and emissions.

Combine with PlumeStop Plume Treatments backed by PlumeShield

REGENESIS PFAS source zone remedies can be combined with PlumeStop permeable reactive barriers to cut off the plume and provide rapid offsite risk removal. Treatment performance warranty options are available through the PlumeShield warranty program.

REGENESIS®

On-Site Remediation Services

Unparalleled Expertise

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