Entries for December 1-15, 2025

Market/Commercialization Information

F -- MID-PLUME GROUNDWATER REMEDIATION AT THE WALTON AND LONSBURY SUPERFUND SITE, ATTLEBORO, MASSACHUSETTS (SOL)
U.S. Army Corps of Engineers, North Atlantic Engineer Division, New England District, Concord, MA
Contract Opportunities on SAM.gov W912WJ26RA001, 2026

This is a total small business set-aside under NAICS code 562910. The U.S. Army Corps of Engineers New England District requires a contractor to conduct mid-plume remediation work at the Walton and Lonsbury Superfund Site in Attleboro, Massachusetts. Specifically, the contractor will be tasked with pre-construction planning and surveys; site preparation, including fencing, clearing, staging, erosion controls, monitoring well protection or abandonment, and construction of a work platform; and construction of the mid-plume treatment transect through excavation, soil management and disposal, mixing and quality control of zero-valent iron and sand, and backfilling with reactive media. Following construction, the contractor will restore the site through capping, grading, slope stabilization, wetland restoration, installation of new monitoring wells, removal of temporary facilities and controls, fence replacement, and repair of affected pavement. The work concludes with vegetation establishment, two semiannual groundwater monitoring events to assess remedy performance, and accommodation of an existing stormwater drain along the treatment transect alignment. The award will be a firm-fixed-price contract. Offers are due by 1:00 PM EST on February 12, 2026. https://sam.gov/workspace/contract/opp/f71745903659413e8d895d8e67fa44fd/view

A -- ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP) ENVIRONMENTAL TECHNOLOGY DEMONSTRATIONS (PRESOL)
U.S. Army Corps of Engineers, Humphreys Engineer Center Support Activity, Alexandria, VA
Contract Opportunities on SAM.gov W912HQ26S0003, 2026

The ESTCP is DoD's demonstration and validation program for environmental and installation energy technologies. The ESTCP Office is interested in receiving pre-proposals for innovative technology demonstrations that address DoD environmental and installation energy requirements as candidates for funding. The pre-proposal review step allows interested organizations to submit technology demonstrations for Government consideration without incurring the expense of a full proposal. Based upon the pre-proposal evaluation by ESTCP, each pre-proposal submitter will be notified as to whether ESTCP requests or does not request the submission of a full proposal. As noted in the instructions, evaluation criteria for pre-proposals are, in decreasing order of importance, Technical Merit, Cost/Benefit of Technology, Transition Potential, and Cost of Proposal. Due to the anticipated volume of pre-proposals that will be received, the Government will not provide debriefs to those who are not requested to submit a full proposal. Instructions for preparing a full proposal will be provided at the time of notification. A request for submission of a full proposal does not indicate a decision has been made to make an award. Readers should note that this is an announcement to declare ESTCP's intent to competitively fund demonstration projects as described in the Program Announcement on the ESTCP website. The Program Announcement and complete submittal instructions are found at https://serdp-estcp.mil/workwithus. There is no commitment by ESTCP to make any contract awards, nor to be responsible for any cost incurred by the offeror before a contract award is made. It is expected that multiple awards totaling approximately $10 million will result, depending on the availability of funds. To be eligible for consideration, parties wishing to respond to this announcement must submit a pre-proposal in accordance with the instructions on the website, no later than 2:00 PM ET on March 12, 2026.
https://sam.gov/workspace/contract/opp/98c09c1f979e4403bb1c8b08cdcc3c93/view

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM SUPPLEMENTAL BROAD AGENCY ANNOUNCEMENT
U.S. Army Corps of Engineers, Humphreys Engineer Center Support Activity, Alexandria, VA
Contract Opportunities on SAM.gov W912HQ26S0025, 2026

SERDP is DoD's environmental research and development program, planned and executed in partnership with the Department of Energy and the Environmental Protection Agency. SERDP is seeking proposals responding to Statements of Need (SONs) for projects to be funded in Fiscal Year (FY) 2027 with a focus on Weapons Systems and Platforms technologies:

1. Develop innovative and scalable synthetic approaches of nitration to form energetic molecules of interest to the Department of War that significantly reduces the amount of mixed acid (sulfuric and nitric acids) waste,
2. Identify efficient and effective chemical strippers for removal of organic coatings and sealants applied to composite substrates to enable development of a specification,
3. Deliver a predictive methodology for assessing the performance of new, viable corrosion mitigation solutions,
4. Develop technologies and processes to enable recovery of critical minerals from waste Department of War materiel to reduce reliance on mining operations and foreign sources, and
5. Develop a safe, scalable, and durable processes to reduce the size of energetic materials to enable treatment of energetic materials through a closed destruction technology (CDT)

Awardees under this BAA will be selected through a multi-stage review process, including a brief pre-proposal, a full proposal, and an oral presentation to the SERDP Technical Review Board (TRB) for final approval. To be eligible for consideration, proposers must submit a pre-proposal in response to only one of the SERDP SONs set forth in this announcement. Proposers may respond to more than one SON with separate pre-proposals. The Government will not pay proposers any costs for submitting a response to this announcement. There is no commitment by SERDP to make any recommendations for contract awards, nor to be responsible for any money expended by the proposer before contract award is made. To be eligible for consideration, parties wishing to respond to this announcement must submit a pre-proposal in accordance with the instructions on the website, no later than 2:00 PM ET on February 6, 2026.
https://sam.gov/workspace/contract/opp/63fdc505db3645408f58992b9198f820/view

Return to top

Cleanup News

IN SITU STABILIZATION AND SOLIDIFICATION OF A FORMER MANUFACTURED GAS PLANT
Foss, D. Northwest Remediation Conference, 20 October, Tacoma, WA, 10 slides, 2025

This presentation describes the successful application of in situ stabilization and solidification (ISS) to remediate a former manufactured gas plant site with deep and complex subsurface contamination. The 1.5-acre site, located in a highly constrained urban setting between major transportation corridors and adjacent to a river, contained soil and groundwater impacted by VOCs, SVOCs, TPH, and NAPL to depths of up to 75 ft bgs. Because contamination was largely confined beneath clean overburden and offsite migration was not a primary concern, ISS was selected as a cost-effective alternative to excavation and disposal. The remedial approach combined deep soil mixing with cement- and slag-based binders to immobilize contaminants, reduce leachability, and improve soil handling characteristics. An integrated earth retention system allowed remediation to proceed safely within the limited footprint while also serving as part of the treatment zone. Multiple mix designs were used to address variable site conditions, and swell management and final cover installation were incorporated into the overall design. The project demonstrated that ISS can effectively meet remedial objectives of preventing exposure, limiting contaminant migration, and reducing risk at ~ half the cost of traditional removal and offsite disposal. The case study highlights ISS as a particularly effective solution for deep contamination in confined urban sites, especially where clean overburden and infrastructure constraints make excavation impractical.
https://nwremediation.com/wp-content/uploads/A1_Foss.pdf

ENHANCED HYDROCARBON BIODEGRADATION VIA SOIL VAPOR EXTRACTION SYSTEM OPERATION
Kulkarni, P.R., T.M. McHugh, J.S. Cook, A. Farnell, C. Bruce, and B. Bealer.
Remediation Journal 36(1):e70050(2025)

Long-term monitoring data from the extracted vapor of six soil vapor extraction (SVE) systems were evaluated to quantify hydrocarbon removal via direct hydrocarbon extraction, aerobic biodegradation, and anaerobic biodegradation. Aerobic biodegradation rates were calculated from the magnitude of oxygen depletion and carbon dioxide enrichment in the extracted vapor. In contrast, anaerobic rates were estimated from methane enrichment when data were available. Results reveal that aerobic biodegradation may account for 39% to 86% of the total mass removed, often exceeding the magnitude of direct hydrocarbon removal. Methanogenesis, a natural process likely not enhanced by SVE operations, contributed 5% to 31% of total biodegradation at some sites with operating SVE systems, highlighting the significance of natural attenuation. Findings underscore the importance of quantifying biodegradation as part of total hydrocarbon removal at sites with active SVE systems, providing insights for refining site management strategies.

PERMEABLE REACTIVE BARRIERS IN A RESIDENTIAL SETTING
Whitehouse, L., D. Kubow, and W. Caldicott. | AEHS Foundation 41st Annual International Conference on Soils, Sediments, Water and Energy 20-23 October, Amherst, MA, 16 slides, 2025

In the late 1990s, large-scale remediation of petroleum-impacted soil and groundwater was conducted, including soil vapor extraction and air sparge systems at an active service station located upgradient of multiple residential properties. Recent utility work identified petroleum-impacted soil/groundwater 600 ft downgradient of the service station and immediately adjacent to residential properties. Subsequent characterization identified residual petroleum impacts along the roadway and downgradient residential properties. Additionally, a manmade swale constructed within a downgradient wetland was receiving petroleum-impacted groundwater from footing drains surrounding a residential dwelling. Initial response activities included the excavation of impacted sediment within the wetlands, installation of a collection sump for footing-drain discharge water, and the implementation of a P&T system that treated impacted groundwater and discharged it back to the wetlands. Based on the absence of a long-term available power source for the treatment system, a purpose-built solar array was installed. Six permeable reactive barriers (PRBs) were injected across two residential properties to mitigate petroleum-impacted groundwater at the front of the contaminant plume. A carbon-based slurry was injected in 2-ft vertical intervals on a triangular grid spacing of 4-5 ft through 134 injection points over a ~3,000 ft² area. A total of 5,590 gallons of the carbon-based slurry was injected into the subsurface over 17 days. The presentation highlights the

iterative approach and challenges associated with utility corridors and varying geological conditions to address sensitive receptors and protect human health.
https://s3.amazonaws.com/amz.xcdsystem.com/A51108D5-FA2F-2B6D-01D92AC0F42DCE3B_abstract_File26129/PDFofPresentation_161_1019075845.pdf

USING NATIONAL LAND COVER DATABASE AS AN INDICATOR OF SUCCESSFUL REMEDIATION: THE DEPARTMENT OF ENERGY'S ROCKY FLATS (COLORADO) AS A CASE STUDY

Burger J., M. Gochfeld, K.G. Brown, M. Cortes, K. Ng, and D.S. Kosson.
Journal of Toxicology and Environmental Health, Part A 89(1):1-17(2026)

A project examined the % ecological resources remaining on Rocky Flats (RF) following completion of cleanup, compared the ecological resources (i.e., plant cover) of RF with the surrounding 10-km and 30-km bands of land, and measured % natural vegetation on RF with comparable % on three other large DOE facilities that are still undergoing remediation. The project aimed to examine the implications of ecological protection of climax vegetation and the importance of consistently examining regional ecologies. Rocky Flats contains significantly more grassland than the surrounding region, with less development, and is mostly a National Wildlife Refuge open to the public. Agriculture and grazing do not occur on RF. The three sites undergoing remediation have significantly more natural habitat (climax vegetation) than their surrounding buffer areas.

Return to top

Demonstrations / Feasibility Studies

HIGH-ENERGY IN-SITU INJECTION OF A MODIFIED CLAY FOR SEQUESTRATION OF PFAS

Pizzaro, D. and P. O'Neill. I PFAS Forum V, 9-11 April, Orlando, FL, 25 minutes, 2025

Overburden injection of the organically modified clay (MC) FluoroSorb® for the remediation of PFAS has been demonstrated on several pilot programs using direct push technology (DPT) and high-solids slurry batching and injection equipment. Field deployments of MC were conducted in demonstration projects in Kentucky, California, and Alberta, Canada, to prove the injectability and performance of the technology in source (grid) and plume bisection (PRB) deployments. The demonstrations verified the injectability and distribution of the MC as effective in numerous geologies and site implementations. Various MC slurry designs were tested in Kentucky, examining increasingly dense and higher solids mixes to mimic site situations where significant product mass would be matched to significant PFAS mass. The slurry designs and specifications are discussed from bench-scale evaluation to field deployment, along with lessons learned from varying the ratios of product and carrier fluid (water). At the California site, the MC was co-injected with calcium polysulfide to treat PFAS and hexavalent chromium, proving slurry design flexibility and compatibility. In Alberta, MC was installed as a PRB and then monitored for over a year with a continued PFAS source upgradient. The presentation discusses the performance and longevity of this installation, including groundwater monitoring data and post-injection soil core evaluation of product distribution in situ using a newly developed MC dye test. https://www.youtube.com/watch?v=eslD70f3R-s&list=PLYW8x4mEadkvXQ-ttPfXaadoPU5Sv_Wvs&index=14

PFAS TREATMENT WITH ERADIFLUOR™: AN INNOVATIVE DESTRUCTION TECHNOLOGY

Xiong, J. I 27th California Unified Program Annual Training Conference, 24-27 March, Anaheim, CA, 48 slides, 2025

A field test was conducted at a U.S. naval installation on the Eastern Seaboard to demonstrate the use of EradiFluor, a PFAS destruction technology. The system operates under ambient pressure and temperature as it relies on ultraviolet light and common chemicals to destroy PFAS. The technology was used to treat a concentrated waste produced from an in situ foam fractionation system to remediate PFAS-contaminated groundwater. Multiple PFAS chemicals in varying concentrations were detected in a sample of the concentrated waste, the foam fractionate. To define success for the field test, clear performance objectives for decreases in PFAS concentration, defluorination, and cost and energy savings were established. Results of samples collected before, during, and after treatment showed successful treatment of the foam fractionate waste.
https://calcupa.org/CMS15/upload-manager/presentations/CUPA-2025/9111-34288-pfas_th-f1_eradifluor_xiong_final.pdf

WIRELINE TEMPERATURE MEASUREMENT OF NATURAL SOURCE ZONE DEPLETION ENHANCED BY ENGINEERED REMEDIATION

Stumpf, P., R. Kannappan, L. Klinchuch, and N. Sihota.
Groundwater Monitoring & Remediation 45(4):32-41(2025)

Work compared rates of engineered source zone depletion (ESZD) and natural source zone depletion (NSZD) for a deep aquifer using wireline temperature measurements. Heat released during biodegradation of petroleum hydrocarbons was detected by measuring a continuous vertical profile of the subsurface temperature using a wireline logging tool to depths ranging up to 120 m bgs. The temperature profiles were converted to heat fluxes to estimate ESZD and NSZD rates. The field demonstration identified two distinct biodegradation zones: a shallow zone resulting from diffusion of atmospheric oxygen into the subsurface and a deep zone created by the engineered addition of oxygen through bioventing and air sparging. Initial NSZD rates for the shallow zone ranged from 970 to 9400 L/ha/yr while the engineered systems were in operation. Initial ESZD rates for the deep zone ranged from 3200 to 5500 L/ha/yr. After shutting down the remediation systems, the deep zone ESZD rate decreased by ~70% over 7 months in one well. Overall, shallow NSZD rates measured at the site are consistent with rates reported in the cited literature and exceeded or were equal to deep ESZD rates from engineered remediation. Advantages of wireline thermal profiling include the ability to utilize existing wells without sacrificing the well for other purposes; record real-time continuous temperature profiles with better resolution over significant depth; directly measure the temperature peak for calculating heat flux and degradation rate; and repeat temperature monitoring to provide temporal changes in the remediation life cycle.

FIELD-SCALE QPCR DATA TO ESTIMATE RATE CONSTANTS FOR TOLUENE BIODEGRADATION IN GROUNDWATER

Pilloni, G., J. Wilson, S. Rosolina, B. Oyston, D. Taggart, and T.A. Key.
Groundwater Monitoring & Remediation 45(4):42-50(2025)

An approach was developed to estimate an apparent first-order rate constant for anaerobic biodegradation of toluene based on toluene concentration and the abundance of the alpha subunit of the benzylsuccinate synthase gene (*bssA*). The utility of the approach was evaluated by comparing the distribution of estimated rate constants to those from a published compilation at benchmark sites. There was good agreement between the distribution of rate constants calculated from the abundance of gene copies from soil cores and the distribution of rate constants at benchmark sites, while rate constants calculated from the abundance of gene copies in groundwater were lower than those from benchmark sites. Given that groundwater samples are more common and convenient to obtain, it is proposed to use the rate constants estimated from groundwater samples to document whether the microbial community has acclimated to toluene biodegradation. Models to evaluate risk at petroleum release sites often assume a "typical" biodegradation rate constant. If the abundance of the *bssA* biomarker demonstrates that the microbial community has acclimated, then it is appropriate to select and use a rate constant from benchmark sites to forecast biodegradation and attenuation of toluene at a site being evaluated. https://ngwa.onlinelibrary.wiley.com/doi/epdf/10.1111/gwmr.70011

Return to top

Research

MONITORING OF IN SITU REMEDIATION TECHNOLOGIES WITH SIP

Emerson, H., J. Thomle, Z. Vincent, J. Robinson, J. Torgeson, K. Peshtani, N. Qafoku, J. Szecsody, J., F. Day-Lewis, and L. Slater. PNNL Report PNNL-36585, 41 pp, 2024

This project aimed to elucidate the sensitivity of spectral induced polarization (SIP) to specific geochemical reactions occurring during subsurface remediation based on their impact on polarization of minerals and their surfaces. The document outlines progress for fiscal year 2024 toward validating SIP for monitoring specific reactions related to remediation at lab-scale. The work aims to advance the technology to field-scale for monitoring of amendment delivery and subsequent reactivity for subsurface remediation. An interdisciplinary critical review team reviewed historical SIP data collected under the Deep Vadose Zone program. Based on feedback from the team, additional experiments were designed and initiated for the calcium citrate phosphate technology for in situ formation of apatite. Additional analysis was conducted with data from sulfur-modified iron experiments to consider the potential for scaling monitoring with SIP in the field. Preliminary results showed a significant decrease in SIP response due to apatite formation in 1D column experiments. Synthetic field data were generated on 2 m×2 m×2 m blocks placed 1 m and 2.5 m below the ground surface, based on previous lab-scale experiments. Results showed that changes in SIP response due to the delivery of sulfur-modified iron could be measurable at specific frequencies in the field. The team outlined a proposed framework for future evaluation of SIP for environmental remediation monitoring based on two broad knowledge gaps in the fundamental understanding of SIP and moving SIP from lab to field-scale to monitor delivery and reactivity of amendments. For the first knowledge gap, the scope outlined included well-characterized microfluidics experiments to interpret and model SIP responses based on different geochemical reactions and processes. For the second knowledge gap, additional 1D and 2D experiments spanning up to intermediate scale (cm to m) were recommended to consider the impact of subsurface heterogeneity and amendment delivery on SIP response. https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-36585.pdf

IN SITU CHEMICAL OXIDATION OF NONIONIC ORGANIC CONTAMINANTS: THE EFFECT OF SOIL ORGANIC MATTER AND MINERALS ON STOICHIOMETRIC EFFICIENCY

Salazar, J.S., T.K. Kim, and D.L. Sedlak. (2025).
Environmental Science & Technology 59(42):22940-22949(2025)

The stoichiometric efficiency (i.e., moles contaminant transformed/mole $SO_4^{\bullet-}$) was measured for a homologous series of chlorinated benzenes using solid-to-water ratios approaching subsurface conditions to determine the potential of solids to protect contaminants from oxidation. Sorption to inorganic surfaces reduced the stoichiometric efficiency by 3 orders of magnitude relative to contaminants in solution. At low initial oxidant concentrations (i.e., 10 mM), adsorbed contaminants were oxidized after desorbing to reestablish equilibrium. At higher oxidant concentrations (i.e., 500 mM), contaminant loss was attributable to $SO_4^{\bullet-}$ that reacted at the particle surface. Absorption by particulate organic matter (i.e., Pahokee peat) offered greater protection. For the most hydrophobic compounds (tetra-, penta-, and hexachlorobenzene), 1.5% organic matter by mass reduced the stoichiometric efficiency by an additional order of magnitude. The effect of sorption on the efficacy of persulfate ISCO can be predicted using contaminant hydrophobicity (K_{OW}), persulfate dosage, and particulate organic matter content.

USING BIOCHAR IN STATIC AND DYNAMIC FLOW SYSTEMS TO REMEDIATE PER- AND POLYFLUOROALKYL SUBSTANCES FROM CONTAMINATED STORMWATER RUNOFF
Celma, A., A. Skrobonja, S.G. Khokarale, J.-P. Mikkola, E. Sormo, G. Cornelissen, K. Wiberg, and L. Ahrens. Remediation 36(1):e70041(2025)

A study assessed the potential mitigation of PFAS using biochar adsorption as a green alternative to coal-based sorbents for PFAS-polluted stormwater systems. Thirteen biochar materials originating from diverse feedstocks and intended for commercial and research purposes were initially screened for PFAS remediation capabilities in static flow systems. Experiments pointed to biochar sorption as a promising strategy for PFAS remediation, with some materials showing removal efficiencies of ~99% after 7 days of exposure. Though not all the biochar materials tested performed equally, differences could be observed. Five biochar materials were then studied under constant-flow column experiments for 69 days using real stormwater spiked with PFAS. Results showed that vast differences were observed for the retention rates of the tested PFAS contaminants, with estimated bed volumes for an 80% breakthrough ranging from 13 to 60 for perfluorobutanesulfonic acid and from 4 to 53 for perfluoropentanoic acid, for example. Static and dynamic flow experiments highlighted that long-chain PFAS showed stronger sorption onto the biochar surface than short-chain PFAS; however, no relevant impact could be identified in terms of the PFAS functional group. https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70041

REMOVAL OF PAHS FROM LARGE-SCALE CONTAMINATED SOIL IN A BIOAUGMENTED SLURRY REMEDIATION SYSTEM: OPTIMAL CONDITIONS VERIFICATION, ENVIRONMENTAL PARAMETER MONITORING, AND MICROBIAL COMMUNITY ANALYSIS
Wang, F., J. Chen, X. Xiao, X. Wang, and S. Chen.
Bioresource Technology 439:133377(2025)

PAH removal was enhanced through a combination of bioaugmentation, condition optimization, and the addition of nitrogen sources and surfactants. A fully functional bioaugmented slurry remediation system was constructed to provide a device template for PAH-contaminated site remediation. The study investigated the effects of peptone or Tween-80 addition on PAH removal by NS4 in the system. Tween-80 addition under optimal conditions achieved a higher PAH removal efficiency than optimal conditions (with or without peptone addition). System monitoring showed that microbial growth, metabolism, and PAH biodegradation collectively reduced DO and pH while increasing EC. Monitoring these parameters can indirectly reflect microbial activity and PAH removal progress, offering new insights for onsite supervision of PAH remediation. Soil microbial communities differed significantly across environmental conditions. Environmental conditions and remediation time jointly influenced microbial community and functional succession, with environmental conditions exerting a stronger driving force. Network analysis identified 42 microbial OTUs and 16 PAH-degradation genes as key factors, revealing close interactions between soil microorganisms and PAH-degradation genes.

SCENARIO-SPECIFIC ATTENUATION FACTORS FOR VAPOR INTRUSION SCREENING
Lahvis, M.A., R.A. Ettinger, R. Abbasi, and W.R. Jones.
Groundwater Monitoring & Remediation 45(4):87-100(2025)

A comprehensive study was undertaken to derive attenuation factors (AFs) for vapor intrusion (VI) screening that are more applicable to variable site conditions than the generic default AF of 0.03 recommended by EPA. The study involved developing an empirical AF database consisting of >26,000 paired measurements of indoor air (C_{IA}) and subsurface (C_{SSG}) vapor concentration data for 37 chemicals at 1,541 buildings, 330 sites, and 32 states across the U.S. After extensive filtering to exclude low-quality data and limit potential effects from background sources, the database was reduced to 1,474 TCE and PCE C_{IA} and C_{SSG} data pairs from 271 buildings, 86 sites, and 15 states. Building-specific AFs were used to address the bias and ambiguity caused by buildings with large numbers of C_{IA} and C_{SSG} data pairs. Descriptive statistics and analysis of variance (ANOVA) performed on the filtered database indicated that the most significant variables affecting building-specific AFs were subsurface sample type (i.e., subslab versus near-slab soil gas), building type, US Climate Zone, building construction date, and building foundation type. Scenario-specific 95th percentile AFs defined for particular combinations of these variables varied by over an order of magnitude and were up to 10× less than 0.03. The 95th percentile AFs were broadly supported by reliability analyses, AF versus C_{SSG} trend evaluations, and an AF analysis of radon data, and were consistent with values derived in prior empirical AF studies. Some of the less significant variables were time and lateral distance between C_{IA} and C_{SSG} sampling (P-values of 0.0008 and 0.002, respectively). The AFs can be used to improve VI screening for a range of building, sampling, and geographic conditions and help focus resources toward sites posing the greatest potential risk.
https://ngwa.onlinelibrary.wiley.com/doi/epdf/10.1111/gwmr.70012

MYCORRHIZED LYGEUM SPARTUM IS EFFECTIVE FOR THE ECO-RESTORATION AND PHYTOREMEDIATION OF METAL-CONTAMINATED SOILS IN ARID LANDSCAPES
Terwayet Bayouli, I., R.A. Root, H. Terwayet Bayouli, E. Meers, M. Di Bonito, J. Zhou, and J. Chorover. | Environmental Research 286(Part 1):122752(2025)

A study evaluated the effectiveness of mycorrhiza-amended xeric plant species *Lygeum spartum* in coping with arid conditions to phytoremediate and ecologically restore degraded and contaminated land. A 6-month controlled pot experiment was conducted to assess leaf length, enzymatic activities, and secondary metabolites. The fate of toxic metals and metalloids (TMMs) was evaluated using translocation factor (TF), bioaccumulation factor (BF), and removal efficiency (RE). Fungal inoculation positively impacted growth, increasing leaf size by 64.6% and enhancing chlorophyll content - Chl a (0.73 mg/g DW) and Chl b (0.64 mg/g DW). Root uptake of Cd, Ni, Zn, Cu, Co, Cr, and Pb was significantly enhanced in mycorrhizal plants ($p < 0.05$), and inoculation improved translocation of Zn, Cr, and Co, with TF(Zn) = 1.67, TF(Cr) = 1.11, and TF(Co) = 1.05, respectively. Secondary metabolites included flavonoids, total phenols, glutathion-S-transferase, carotenoids, and antioxidants such as peroxidase (4.25 µmol/min/mg proteins), ascorbate peroxidase (2.14 µmol/min/mg proteins and superoxide dismutase (17.04 66 U/mg protein). However, no improvement was observed in catalase activity or free radical scavenging potential.

Return to top

General News

U.S. EPA COUNTS PER MINUTE (CPM) FOR SUPERFUND ELECTRONIC CALCULATOR
U.S. EPA COUNTS PER MINUTE (CPM) FOR SUPERFUND ELECTRONIC CALCULATOR
U.S. EPA, 2025

EPA developed the CPM electronic calculator to help risk assessors, RPMs, and others involved with risk assessment and decision-making at radioactively contaminated sites. The CPM electronic calculator provides a method for correlating real-time survey results, which are often expressed as counts per minute, to contaminant concentrations that are more typically expressed in pCi/g or pCi/m ^{2}, at Superfund sites (those regulated under CERCLA). The CPM calculator intends to facilitate more real-time measurements within a Superfund response framework. The CPM calculator may also standardize the process of converting lab data to real-time measurements. It will thus lessen the amount of lab sampling that is needed for site characterization and confirmation surveys, but it will not remove the need for sampling. https://epa-cpm.ornl.gov/index.html

PFAS - PER- AND POLYFLUOROALKYL SUBSTANCES SORPTION-BASED TECHNOLOGIES FOR SEPARATION AND CONCENTRATION OF PFAS FROM WATER
Interstate Technology Regulatory Council, Section 18 of PFAS Guidance, 2026

The purpose of this section is to collate and summarize the current state of knowledge and practice for PFAS removal from water by sorption-based technologies and provide a resource to help regulators, consultants, and industry practitioners navigate the decision-making process. Topics addressed include treatment objectives, characteristics of commonly treated waters, potential site-specific considerations, operation and testing of fixed-bed and fractionation-based treatment technologies, resources for decision-making, and outstanding challenges for treatment implementation.
https://pfas-1.itrcweb.org/18-pfas-sorption-based-technologies-guidance/

FIBER-OPTIC DISTRIBUTED TEMPERATURE SENSING (FO-DTS) TECHNOLOGY FOR GROUNDWATER-TO-SURFACE WATER INTERFACE INVESTIGATIONS
NAVFAC Fact Sheet, 4 pp, 2025

Groundwater plumes discharging as "seeps" into streams, wetlands, or coastal waters can transport pollutants; however, these discharge points are often preferentially distributed and can be overlooked by traditional site investigation methods. Recent research has focused on the development of improved tools to locate and delineate groundwater seeps. This fact sheet discusses one advanced tool, FO-DTS, which is a direct-contact technology that shows promise in improving site investigations. FO-DTS uses a fiber-optic cable as a continuous thermal sensor to pinpoint active discharge zones along the cable by detecting subtle temperature differences between groundwater and surface water. This fact sheet highlights the capabilities of the FO-DTS technology and monitoring results from two Navy case study sites. https://www.clu-in.org/NAVFAC-FOTDS

QUANTIFYING NATURAL NAPL ATTENUATION: PRACTICAL TOOLS TO SUPPORT REMEDY TRANSITION
Jourabchi, P. and M. Lahvis. | RemTech 2025: Remediation Technologies Symposium, 15-17 October, Banff, Alberta, Canada, 28 slides, 2025

Practical tools for quantifying natural attenuation (including NSZD) of NAPL in the subsurface, supporting transitions to nature-based remedies, are highlighted in this presentation. The presentation draws from recent guidance, applied research, and publications to emphasize how quantitative tools can inform remedy decisions and demonstrate risk reduction. Recent advances in digital tools now allow more efficient use of existing site data to estimate both bulk NAPL degradation and chemical-specific attenuation rates, improving alignment with risk-based site objectives. The presentation also discusses how these tools can help distinguish between general depletion processes and those targeting specific COCs, offering greater flexibility in remediation planning. Updates to the soil gas gradient method, including refinements in interpretation and new supporting publications, are also highlighted. The developments are increasing confidence in NSZD estimates and expanding the applicability of the method under a broader range of site conditions. Linking NSZD metrics with conceptual site model refinement and long-term performance tracking can help better evaluate remedy transition thresholds and communicate defensible progress toward closure.

Slides: https://esaa.org/wp-content/uploads/2025/10/PARISA-JOURABCHI.pdf
Longer Abstract: https://esaa.org/wp-content/uploads/2025/09/RT2025-program-Abstracts_38.pdf

PFAS IN THE ENVIRONMENT: OCCURRENCE, CHARACTERIZATION, TREATMENT, AND MANAGEMENT
Surampalli, R.Y., T.C. Zhang, B.M. Al-Hashimi, C.-M. Kao, M.M. Ghangrekar, P. Bhunia, and S. Das. John Wiley & Sons, Print ISBN:9781394343904, Online ISBN:9781394343935, 493 pp, 2025

This book provides a comprehensive summary of the chemical and ecotoxicological properties of different types of PFAS, current and emerging detection methods, known and suspected health risks, and removal technologies from water and soil. It considers the recently enacted and much stricter regulations set by EPA and its European counterpart on the production and use of PFAS. A special focus is placed on how water treatment plants may be upgraded to reduce PFAS content in drinking water. Key topics covered include:

- Occurrence, distribution, fate/transport, and behavior of PFAS.
- Climate change threats posed by PFAS.
- Case studies detailing cutting-edge research and remediation of PFAS.
- Global regulations of PFAS.
- Strategies to phase out PFAS from industrial and consumer products and ultimately achieve a PFAS-free environment.

The Technology Innovation News Survey welcomes your comments and suggestions, as well as information about errors for correction. Please contact Michael Adam of the U.S. EPA Office of Superfund and Emergency Management at adam.michael@epa.gov or (703) 399-4268 with any comments, suggestions, or corrections.

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