Entries for July 16-30, 2026

Market/Commercialization Information

TAR LAKE SUPERFUND (SOL)

U.S. Army Corps of Engineers (USACE), Great Lakes and Ohio Engineer Division, Detroit, MI
Opportunities on SAM.gov W911XK26BA030, 2026

This is a total small business set-aside under NAICS code 562910. USACE Detroit District is seeking a contractor for a Firm-Fixed-Price environmental services contract for the Tar Lake Superfund project located in Mancelona Township, Michigan. The project includes excavating contaminated soil and expanding a bio-sparge system. The project will involve excavation of approximately 172,500 tons of contaminated soil, backfilling with clean imported soils, installing new bio-sparge wells, and installing an approximately 160-square-foot pre-engineered structure to house the bio-sparge system compressors. Ancillary activities include abandoning existing groundwater monitoring wells, installing new groundwater monitoring wells, installing erosion control measures, conducting a utility survey to locate existing bio-sparge system piping, confirmation soil sampling, and site restoration. The project also includes the development of a Quality Assurance Project Plan (QAPP) prior to the start of any project activities. The QAPP will detail the planning, implementation, and assessment steps for environmental data operations to ensure quality. The QAPP will follow EPA's standard QAPP format and will require the contractor to host three to four scoping meetings with appropriate EPA personnel to ensure that the QAPP is EPA-compliant. The period of performance is from October 1, 2026, through September 30, 2030. Offers are due by 2:00 PM EDT on September 21, 2026.
https://sam.gov/workspace/contract/opp/f73f58c55eac40e9a7ffe0e351577311/view

PRESOLICITATION NOTICE; R5; ERRS CONTRACT; REVISED (PRESOL)

EPA Region 5 Contracting Office, Chicago, IL
Opportunities on SAM.gov 68HE0526R0023, 2026

When this solicitation is released sometime in mid-September, it will be competed as a total small business set-aside under NAICS code 562910. The intent of this pre-solicitation synopsis is to notify potential offerors of the upcoming solicitation for EPA's requirement for Region 5's Emergency and Rapid Response Services contract. This contract is to provide emergency responses, time-critical and non-time-critical removals and remedial actions with respect to the release or threat of release of oil, hazardous and toxic wastes, petroleum products, hazardous substances, or pollutants, contaminants, or fire or explosion hazards that pose an actual or potential threat to human health or welfare, or the environment. This procurement will also include the cleanup for incidents involving weapons of mass destruction, acts of terrorism, and nuclear, biological, and chemical incidents. The following states will be supported by this contract: IL, IN, MI, MN, OH, and WI. There is no solicitation at this time. Https://sam.gov/workspace/contract/opp/10ee301adb4b473ab547c4958cd39e22/view

PRESOLICITATION NOTICE; R4; ERRS CONTRACT (PRESOL)

EPA Region 5 Contracting Office, Chicago, IL
Opportunities on SAM.gov 68HE0526R0040, 2026

When this solicitation is released sometime in mid-September, it will be competed as a total small business set-aside under NAICS code 562910. The intent of this pre-solicitation synopsis is to notify potential offerors of the upcoming solicitation for EPA's requirement for Region 4's Emergency and Rapid Response Services contract. This contract is to provide emergency responses, time-critical and non-time-critical removals and remedial actions with respect to the release or threat of release of oil, hazardous and toxic wastes, petroleum products, hazardous substances, or pollutants, contaminants, or fire or explosion hazards that pose an actual or potential threat to human health or welfare, or the environment. This procurement will also include the cleanup for incidents involving weapons of mass destruction, acts of terrorism, and nuclear, biological, and chemical incidents. The following states will be supported by this contract: AL, FL, GA, KY, MS, NC, SC, and TN. There is no solicitation at this time. Https://sam.gov/workspace/contract/opp/1984c9b7225c41579d9d6de5de849d6f/view

PRESOLICITATION NOTICE; R6; ERRS CONTRACT (PRESOL)

EPA Region 5 Contracting Office, Chicago, IL
Opportunities on SAM.gov 68HE0526R0041, 2026

When this solicitation is released sometime in mid-September, it will be competed as a total small business set-aside under NAICS code 562910. The intent of this pre-solicitation synopsis is to notify potential offerors of the upcoming solicitation for EPA's requirement for Region 6's Emergency and Rapid Response Services contract. This contract is to provide emergency responses, time-critical and non-time-critical removals and remedial actions with respect to the release or threat of release of oil, hazardous and toxic wastes, petroleum products, hazardous substances, or pollutants, contaminants, or fire or explosion hazards that pose an actual or potential threat to human health or welfare, or the environment. This procurement will also include the cleanup for incidents involving weapons of mass destruction, acts of terrorism, and nuclear, biological, and chemical incidents. The following states will be supported by this contract: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. There is no solicitation at this time. Https://sam.gov/workspace/contract/opp/a9cc52e7081444fc942ac8c59c758059/view

Return to top

Cleanup News

CLEANUP ACTION TO CONCLUDE AT STATE SUPERFUND SITE

Former Silver Cleaners State Superfund Program NYDEC Fact Sheet, New York State Department of Environmental Conservation, 4 pp, 2026

The Former Silver Cleaners site was a dry cleaning facility from 1949 to 2011. The 0.3-acre site is now a paved parking lot. The primary contaminants of concern are chlorinated VOCs, which have impacted soil, groundwater, and soil vapor, primarily in the area around the footprint of the former dry cleaner building. A sub-slab depressurization system has been installed in an adjacent offsite building to address the potential for inhalation of site-related contaminants via vapor intrusion. The key components of the continued cleanup in 2026 include installing three additional injection wells; completing a second round of full-scale in situ chemical oxidation (ISCO) focusing on a deeper groundwater-bearing unit; and groundwater monitoring before and after injections to evaluate the impacts of the ISCO treatment to assist in the planning of future ISCO event(s), as required to meet the target contaminant reduction in the soils and groundwater. After cleanup activities are completed, NYSDEC will prepare a Final Engineering Report, which will describe the cleanup activities completed and certify that cleanup requirements have been achieved or will be achieved. Https://extapps.dec.ny.gov/data/der/factsheet/828186cucomp.pdf
All site documents: https://extapps.dec.ny.gov/data/DecDocs/828186/

REACTIVE CORE MATTING (RCM) TO PASSIVELY TREAT PFAS-IMPACTED GROUNDWATER DISCHARGING TO A SMALL STREAM

Divine, C., J. Erickson, K. Heinze, A. Turner, and R. Krebs.
Groundwater Monitoring & Remediation 46(3):55-65(2026)

Groundwater near a former fire training area (FTA) discharges to a nearby small perennial stream and is impacted by PFAS, including PFOS, PFOA, PFHxS, PFHxA, PFBS, and PFBA. Upstream of the FTA, total PFAS ($\sum_{24}$PFAS measured by EPA Method 537.1) concentration in the stream is ~10,000 ng/L, due to other PFAS sources. After passing by a 400-foot-long reach adjacent to the FTA, in-stream $\sum_{24}$PFAS increased by an average of ~15,000 ng/L as a result of the discharge of impacted groundwater (the average $\sum_{24}$PFAS mass discharge from groundwater is estimated at ~5.0 g/d). Reactive core matting (RCM) consisting of adsorptive media (FLUORO-SORB® 200) woven between two layers of permeable geo-fabric was installed along a targeted reach of the stream to passively remove PFAS from discharging groundwater. Nine quarterly performance monitoring events, including streamflow, porewater, and surface water concentration measurements, were conducted over 2.4-years. The RCM successfully reduced $\sum_{24}$PFAS mass discharging from groundwater to the stream, removing an estimated 8.2 kg of $\sum_{24}$PFAS, which represents nearly all PFAS mass discharging from groundwater. The stream treatment values (calculated from the increase in concentration over the reach after RCM installation compared to baseline) were relatively high and consistent, all averaging >80%. However, some PFAS (notably PFBA, PFBS, PFHxA, and PFHxS) show a slight decline in stream treatment values for the last two monitoring events, possibly indicating treatment efficiency may have begun to decline for these specific PFAS.

EVIDENCE BASED RAPID CVOC REMEDIATION WITH PROOF: LINKING MICROBIAL, GEOCHEMICAL, AND ANALYTICAL DATA

Sheldon, J. and P. Erickson. Microbial Insights Webinar, 58 minutes, 2026

A former oil-field chemical site presented a complex chlorinated solvent remediation challenge, with TCE and daughter products distributed through heterogeneous silts, clays, and interbedded sand seams. An upward hydraulic gradient, variable contaminant mass flux, and an accelerated redevelopment schedule further complicated remedy design. A pilot study first evaluated an integrated amendment approach combining PlumeStop® for sorption, sulfidated zero-valent iron for abiotic reduction, a sustained-release electron donor, and a dechlorinating microbial culture injected around a monitoring well. Monitoring conducted 30, 60, and 180 days after injection showed the approach rapidly reduced TCE and daughter products, established strongly reducing conditions, and increased dechlorinating microbial populations and functional genes. Using lessons from the pilot, microbial characterization, and groundwater flux-tracer testing, the remedy was expanded across a ~600-foot-long by 300-foot-wide treatment area. The full-scale design incorporated a series of strategically positioned treatment barriers, each containing tailored amendment formulations and dosages to address variations in hydrogeology and contaminant mass flux. Two barrier walls were placed to prevent offsite migration, and about 400 injection points were installed. The integrated approach provided both immediate contaminant mass-flux control and sustained destruction. Colloidal activated carbon rapidly reduced dissolved-phase concentrations and helped limit plume migration, while sulfidated zero-valent iron and enhanced reductive dechlorination provided complementary abiotic and biological pathways for contaminant destruction. Following full-scale implementation, concentrations in most monitoring wells were below applicable standards, and downgradient wells near the property boundary no longer exhibited concentrations of concern. Https://www.youtube.com/watch?v=VW4w8nleklc

Return to top

Demonstrations / Feasibility Studies

FIELD APPLICATION OF BIOELECTROCHEMICAL REDUCTION TECHNOLOGY FOR TREATING HEXAVALENT CHROMIUM IN GROUNDWATER

Li, Y., D. Kong, K. Jin, X. Dong, Q. Zhang, and L. Chen.
Journal of Contaminant Hydrology 276:104744(2026)

A commercialized bioelectrochemical reduction (BECR) technology (E-Redox®-R) was applied at a site in Henan Province, China, to remediate Cr(VI) contamination in groundwater. The BECR pilot system consisted of four units, comprising 12 electrodes installed across a 38.5 m transect. Each unit had one anode well and two cathode wells configured as an isosceles triangle with an inter-electrode spacing of 5.5 m. Within 10 months of operation, groundwater Cr(VI) concentrations ranging from 0.3 mg/L to 46.5 mg/L in the cathode wells decreased by 24% to 99%, despite potential masking effects by the desorption of chromium mass from the soil matrix into the aqueous phase. Within the treatment zone, Cr(VI) concentrations in the two upgradient monitoring wells located near the anode electrodes decreased by 21% and 42%, respectively, while concentrations in the three downgradient monitoring-compliance wells near the cathode electrodes decreased by 65% to 96%. Results indicate that the BECR technology can effectively reduce Cr(VI) in the subsurface and is promising as a sustainable in situ technology for remediating chromium and other contaminants in groundwater.
Https://www.sciencedirect.com/science/article/pii/S0169772225002499/pdfft?md5=c78a8f49604bfa431b6d5fa112f54078&pid=1-s2.0-S0169772225002499-main.pdf

USE OF UPCYCLED BIOSOLIDS FOR BIOREMEDIATION OF GROUNDWATER CONTAMINATED WITH CHLORINATED SOLVENTS

Ghandehari, S.S., I. Van Benschoten, P.D. Arcellana, J.R. White, C. Hapeman, A. Torrents, and B.V. Kjellerup. | Environmental Science and Pollution Research 33:526-539(2026)

A study examined the use of biosolids at a TCE-contaminated site as a sustainable carbon-rich and microbial amendment. A trench filled with biosolids, limestone, and biochar amendments was installed upgradient of a previous permeable reactive barrier remedy that was not performing complete dechlorination of the chlorinated solvents. Field monitoring of water quality parameters was compared with microbial community changes in soil samples collected 9 months after amendment. Results showed that the TCE concentration decreased from 91 µg/L to below the detection limit, with the presence of TCE biodegradation products indicating anaerobic reductive dehalogenation occurring in the trench. Microbial community data analysis provided predictions about metabolic activities and showed the presence of acetogenic activity, suggesting the presence of different dehalogenase enzymes that can contribute to the degradation of chlorinated contaminants. Applying the waste product for sustainable TCE bioremediation in the field was successful in decreasing contaminant levels by upcycling an organic waste product (biosolids).*This article is* ***Open Access*** *at* https://link.springer.com/article/10.1007/s11356-025-37326-y

PILOT-SCALE REMEDIATION, RESOURCE UTILIZATION, AND LONG-TERM STABILIZATION OF CADMIUM, LEAD AND ARSENIC CO-CONTAMINATED SOIL

Liu, J., N. Liu, Y. Li, C. Yang, L. Liang, J. Gao, Y. Xu, and X. Zuo.
Scientific Reports 16:24095(2026)

Remedial efficiency of soil contaminated with complex mixtures of cadmium (Cd), lead (Pb), and arsenic (As) and the feasibility of resource utilization of the soil post-remediation were investigated through batch experiments, pilot-scale trials, and engineering applications. Heavy metals (HMs) were effectively immobilized in batch experiments by a mixture of iron oxides and aluminum oxides. The remedial efficiency was positively linear, correlated with the dose of the remedial agent. A mass ratio of 10% of the remedial agent to soil was the optimal dose to solidify and stabilize HMs. The leaching concentrations of Cd, Pb, and As were reduced from 517.9 μg/L, 1123.4 μg/L, and 73.7 μg/L to 85.7 μg/L, 427.5 μg/L, and 26.7 μg/L, respectively, after solidification treatment. The stabilized soil was then used for brick fabrication. At a 10% dose and a calcination temperature of 900° C, the resulting bricks exhibited low heavy metal leachability, with Cd and Pb concentrations of only 2.5 μg/L and 3.6 μg/L; As was not detected. X-ray diffractometer analysis indicated that Pb was effectively incorporated into the feldspar structure, a common and environmentally friendly mineral phase in the Earth's crust. Pilot-scale trial results confirmed the effectiveness of the solidification of heavy metals, with leaching concentrations of Cd, Pb, and As

ELECTRICITY-INDUCED SIMULTANEOUS IN SITU REMEDIATION OF ARSENIC AND POLYCYCLIC AROMATIC HYDROCARBONS IN GROUNDWATER AT A FORMER WOOD TREATMENT SITE – A FIELD PILOT STUDY

Kumpiene, J., I. Carabante, E. Lindberg, S. Long, N. Pratt, P. Lam, and A.B. Cundy.
ACS ES&T Water 6:3922-3937(2026)

A field pilot experiment evaluated a low-voltage, electricity-induced, soil remediation method designed to immobilize arsenic (As) while simultaneously degrading PAH in situ. The study was conducted at a highly contaminated site using iron (Fe) electrodes supplying pulsed direct current to promote PAH oxidation and Fe release from electrodes for As immobilization. Groundwater in five wells was monitored for concentrations of contaminants, their degradation byproducts, and microbial and fungal community structures. Over two years, dissolved PAH16 concentrations decreased by 62-94% across wells, with no accumulation of oxygenated or nitrogen-containing PAH. Dissolved As concentrations declined by up to 88% at low-PAH levels, but reductions were weaker (55-57%) and more variable at very high-PAH concentrations (hundreds to thousands μg/L). Both prokaryotic and fungal microbial communities were characterized by taxa often found in contaminated aquifers and soils, with enrichment of PAH-degrading and As-tolerant *Pseudomonas*, *Rugosibacter*, and *Duganella*, but showed no adverse effect of the treatment.
Https://pmc.ncbi.nlm.nih.gov/articles/PMC13274490/pdf/ew6c00318.pdf

Return to top

Research

USING PIEZOELECTRIC MECHANOCHEMISTRY FOR SOLVENT-FREE, NONTHERMAL DEFLUORINATION OF PERFLUOROALKYL SUBSTANCES (PFAS) CONTAINED IN CARBON-BASED SORBENTS

Prada, A.F., J. Kim, L. Zhao, F. Li, L. Green, and J.W. Scott.
RSC Mechanochemistry 3:92-99(2026)

A study demonstrated that effective PFAS defluorination using ball milling depended on the presence of piezoelectric catalysts such as boron nitride (BN), which performed the highest among the tested piezoelectric materials. While BN has already proven effective for defluorinating pure PFAS compounds, PFAS in sediments, and AFFF, prior studies have been limited by the small amounts of PFAS they can treat in other media. The coupling of BN with activated carbon as a pre-concentration medium was presented to overcome these limitations. By leveraging activated carbon's high sorption capacity, nearly 100 times higher mass of PFOA was destroyed in less than one-third of the time compared to previous studies on sediments and AFFF. Results suggest that the design of larger-scale ball-milling systems for PFAS destruction should incorporate the use of high-capacity sorbents to concentrate contaminants, thus destroying higher amounts more effectively. Https://pubs.rsc.org/en/content/articlepdf/2025/mr/d5mr00111k

A BENCHMARK STUDY ON AVAILABLE DATA OF HENRY'S LAW CONSTANTS AND VAPOR PRESSURES FOR 30 PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) AND CONSIDERATIONS FOR VAPOR INTRUSION

Robinson, A., P.T. Thompson, H.C. Tay, A.M. Gutierrez, H.N.B. Moseley, P.G. Tratnyek, and K.G. Pennell. | Groundwater Monitoring & Remediation 46(3):101-113(2026)

Henry's law constant (HC) and vapor pressure (VP) data are used to make decisions about which PFAS pose a vapor intrusion (VI) pathway concern. A study generated a comprehensive and extensively curated dataset including 424 HC values and 585 VP values for 30 PFAS spanning seven subclasses. Data were assembled through an iterative process that combined manual and automated retrieval from peer-reviewed literature and major chemical databases, Python-based data expansion and cross-validation, and extensive manual validation to resolve inconsistencies. Across the dataset, 80% of HC values and 34% of VP values met EPA's VI screening criteria, though results varied substantially depending on data source and measurement methods. Model-predicted values were frequently inconsistent with experimental measurements and contributed to uncertainty. The findings show the need for high-quality, experimentally derived physicochemical data when assessing PFAS VI potential and demonstrate the limited reliability of applied modeled values. Rather than arbitrarily treating all values as equal, this study establishes a framework for evaluating data quality for VI conditions, considering data consistency, data sources, and whether the data acquisition method aligns with the VI conceptual site model.

PORE-SCALE OPTIMIZATION OF H2O2-BASED TCE REMEDIATION USING STABILIZER-ENHANCED OXIDANT DELIVERY AND FOLLOW-UP WATER INJECTION

Wang, B., S. Sin, W. Susanto, S. Matsushita, and T. Suekane.
Journal of Contaminant Hydrology 277:104868(2026)

To improve the remediation performance of H_2O_2-based in situ chemical oxidation of DNAPL, such as TCE, a study experimentally investigated three optimization strategies: follow-up water injection, chemical stabilization, and staged oxidant injection. The aim was to remobilize trapped phases and restore oxidant access, directly suppress H_2O_2 self-decomposition by introducing a stabilizer, and reintroduce fresh oxidant to reboot the oxidation process, respectively. The pore-scale remediation processes were visualized using time-resolved 3D micro-computed tomography to quantify the spatial and temporal evolution of TCE and gas phases in porous media. The combined strategy of follow-up water injection and stabilizer achieved a significant enhancement in overall TCE remediation under 5 wt% H_2O_2 conditions, obtaining the highest TCE removal of 78.7%. This study provides direct mechanistic evidence of how physical and chemical measures can jointly enhance oxidant delivery during the remediation process. The pore-scale insights offer guidance for optimizing oxidant management and injection strategies in groundwater environments and highlight the need to consider gas-liquid-DNAPL interactions when designing field-scale remediation systems.
Https://www.sciencedirect.com/science/article/pii/S016977222600029X/pdfft?md5=034d347469fc072d6b2428c4a5656e7c&pid=1-s2.0-S016977222600029X-main.pdf

BIOREMEDIATION OF HEAVY METALS BY *PAENIBACILLUS CHITINOLYTICUS* AND *PAENIBACILLUS CASTANEAE*

Devale, A. and S. Mujumdar. | Remediation 36(4):e70078(2026)

This study explores the potential of biosurfactant-producing Paenibacillus spp., specifically *Penicillus chitinolyticus* (MCC 2462) and *Paenibacillus castaneae* (MCC 2678) and their consortium to bioremediate cobalt (Co) and nickel (Ni) in soil under laboratory conditions. In shake-flask soil washing experiments, purified biosurfactants (BS) from *P. chitinolyticus* (BS 62) and *P. castaneae* (BS 78) successfully achieved heavy metal extraction. *P. chitinolyticus* demonstrated 71.7% Ni removal and 52.7% Co removal within 72 h, and in laboratory-scale bioremediation trials, purified BS achieved 55% Ni removal and 68.13% Co removal. Similarly, 72 h shake flask studies with *P. castaneae* showed 76.7% nickel removal and 61.6% cobalt removal, whereas laboratory-scale soil remediation trials revealed 76.33% nickel removal and 84.2% cobalt removal. Findings demonstrate the potential of biosurfactant-producing *P. chitinolyticus* and *P. castaneae* as effective microbial agents for sustainable heavy metal remediation in contaminated soils.

BIOCHAR-LIME AMENDMENT STRATEGIES TO CONTROL ARSENIC BIOAVAILABILITY DURING PHYTOREMEDIATION OF CONTAMINATED SOILS WITH *LOLIUM MULTIFLORUM*

Gonzalez-Castro, V., M. Librado-Gonzalez, and J.F. Saldarriaga.
Remediation 36(4):e70080(2026)

A study evaluated the effect of biochar-based strategies on arsenic (As) bioavailability during phytoremediation processes with *Lolium multiflorum*. Biochar derived from cocoa husks and agricultural lime was produced by pyrolysis at 500°C and enriched with phosphorus. Treatments with different ratios of biochar and lime (10:90LB, 25:75LB, 50:50LB, biochar and lime) and a control without amendment were established during a 45-day bioassay. Soil physicochemical parameters were monitored. Given that *Lolium multiflorum* is not a hyperaccumulator, the experimental framework is consistent with a phytostabilization strategy in which reduction of As mobility in the soil and its transfer to plant tissues is the primary objective. Arsenic accumulation in the roots and shoots of *Lolium multiflorum* and the resulting plant growth were also evaluated. Amendments significantly reduced arsenic bioavailability compared to the control, achieving reductions between 67% and 76% at the end of the bioassay. The 50:50LB treatment exhibited the best overall performance, combining decreased arsenic bioavailability, improved soil physicochemical properties, lower concentrations of the metalloid in plant tissues, and adequate plant growth.

BIODEGRADATION RATES OF LOW CONCENTRATIONS OF 1,4-DIOXANE IN IMPACTED SITE SEDIMENTS AND AGRICULTURAL SOILS AND AN INVESTIGATION OF THE MICROORGANISMS AND GENES INVOLVED

Li, Z., Z. Eshghdoostkhatami, and A.M. Cupples. | Environmental Pollution 381:126513(2025)

A study had three objectives: 1) examine the effectiveness of basal salts medium (BSM) and yeast extract for enhancing biodegradation removal rates at low concentrations of 1,4-dioxane; 2) identify phylotypes using 1,4-dioxane and/or metabolites to support growth; and 3) evaluate the impact of bioaugmentation with agricultural soil microorganisms on 1,4-dioxane removal. 1,4-Dioxane removal rates were examined in laboratory microcosms with sediment from three impacted sites and four agricultural soils. 1,4-Dioxane biodegradation was only observed in microcosms inoculated with sediments from site 1. Amending site 1 microcosms with BSM and yeast extract improved biodegradation rates, suggesting these amendments positively impacted indigenous 1,4-dioxane degraders. In contrast, 1,4-dioxane was degraded in microcosms inoculated with each of the four agricultural soils. Bioaugmentation with agricultural soils resulted in 1,4-dioxane removal in site 2 microcosms. Phylotypes benefiting from 1,4-dioxane (or metabolite) biodegradation were determined by identifying those significantly enriched in the live sample microcosms (with 1,4-dioxane) compared to the live control microcosms (no 1,4-dioxane) using DESeq2. The group of enriched phylotypes also included those previously linked to 1,4-dioxane biodegradation (*Rhodococcus*, Flavobacterium, Arthrobacter, *Gemmatimonas* and unclassified Rhizobiales and *Chitinophagaceae*). PICRUSt2 analysis indicated several enriched phylotypes were associated with ammonia/particulate methane monooxygenase subunits as well as propane monooxygenase subunits. Overall, the results suggest yeast extract and BSM can be beneficial for promoting 1,4-dioxane biodegradation at sites with indigenous 1,4-dioxane.

Return to top

General News

A DATA-DRIVEN PHYTOTECHNOLOGY FRAMEWORK FOR IDENTIFICATION AND REMEDIATION OF LEACHED-METALS-CONTAMINATED SOIL NEAR COAL ASH IMPOUNDMENTS

Nojabaei, B., H. Foroutan, H. Eldardiry, and R. Stewart. Report No. DEFE0032184, 98 pp, 2026

This project developed and evaluated advanced remote sensing and machine learning approaches to identify, monitor, and address environmental contamination associated with coal combustion residual impoundments and landfills at coal-fired power plants in North Carolina and Virginia. Phase I integrated historical and multi-temporal Sentinel-2 satellite imagery, groundwater monitoring data, and environmental variables to detect vegetation stress potentially caused by toxic metal leaching from coal ash disposal sites. Multiple vegetation and biophysical indices were analyzed to determine their effectiveness in identifying abnormal vegetation growth patterns linked to contamination. Results from case studies conducted at coal ash-impacted power plants showed that satellite-based vegetation monitoring can be an effective early indicator of environmental stress associated with metals (arsenic, cadmium, cobalt, lead, lithium, radium, and thallium). Supervised machine learning models achieved high accuracy in detecting and mapping stressed vegetation associated with leached-metal contamination across multiple sites, while unsupervised learning approaches demonstrated the potential to identify contamination patterns with reduced dependence on labeled field data. The methods provide a scalable, cost-effective, and transferable framework for large-scale environmental monitoring of legacy industrial sites. Phase II developed a data-driven phytoremediation recommendation frameworkthat integrates contamination profiles, environmental conditions, and a curated database of phytoremediation plant species to identify site-specific plant groups capable of extracting, stabilizing, or

immobilizing contaminants. By combining satellite monitoring, machine learning, and phytoremediation planning, the project provides an integrated approach for identifying contaminated areas, improving environmental management, and supporting sustainable remediation strategies for coal ash-impacted landscapes. Https://www.osti.gov/servlets/purl/3155999

ENHANCED NATURAL ATTENUATION: PATHWAYS TO SUSTAINABLE REMEDIATION

De Lurdes Dinis, M., C. Gale, and B. Looney. Sustainable Remediation Forum (SURF) Webinar, 85 minutes, 2026

This webinar, co-hosted with the Pacific Northwest National Laboratory's Center for the Remediation of Complex Sites, explored specific enhanced attenuation technologies and approaches, their associated resource demands and impacts, and methodologies for evaluating and comparing the environmental footprint of different remediation approaches-from green adsorbents to phytoremediation systems. Https://www.youtube.com/watch?v=49dh3hD5x8g&t=48s

UNLOCKING HYBRID ELECTROKINETIC OPPORTUNITIES FOR SOILS RESTORATION AND ADDRESSING CURRENT CHALLENGES

Process Safety and Environmental Protection 216:209235(2026)

A review provides insights into hybrid electrokinetic remediation (EKR), including pH buffers, ion-exchange membranes, reactive filter media for targeted pollutants, and biodegradable chelators that promote metal-ion mobility. It discusses their mechanisms, defining characteristics, and literature achievements. Integrating EKR with advanced oxidation processes, including Fenton oxidation and persulfate activation, along with nanotechnology, particularly zero-valent iron nanoparticles, enhances contaminant degradation. The synergistic potential of combining EKR with phytoremediation, ultrasonication, and bioremediation to accelerate pollutant breakdown and promote sustainable soil restoration is underscored.

FROM ADSORPTION TO DESTRUCTION: A CROSS-MEDIA EVALUATION OF PFAS REMOVAL TECHNOLOGIES

Uddin, M.N., M.S. Islam, A. Samwini, B. Talukder, M.A. Badsha, and D.H. Kang.
Results in Engineering 32:112099(2026)

A review synthesizes 243 peer-reviewed studies published between 2015 and 2025 to introduce a cross-media mass-balance framework that distinguishes PFAS containment processes from irreversible mineralization technologies. Soil stabilization approaches can suppress PFAS leaching by ~60-90% without eliminating contaminant mass. Optimized thermal, electrochemical, and plasma-based destructive technologies can achieve >99% removal under controlled conditions for concentrated solids and liquid residuals. The review compares adsorption, ion exchange, membranes, foam fractionation, thermal treatment, advanced oxidation, electrochemical oxidation, and plasma processes across water, wastewater, soil, and sediment systems while critically distinguishing parent compound removal from verified mineralization based on fluorine mass-balance considerations. The analysis demonstrates that hybrid 'concentrate-then-destroy' treatment trains can reduce overall lifecycle energy demand and cost relative to standalone bulk destructive treatment by limiting high-intensity mineralization to concentrated residual streams. Rather than evaluating individual technologies in isolation, this review proposes a cross-media engineering framework that integrates contaminant capture, concentration, containment, and irreversible destruction to minimize PFAS redistribution and achieve durable contaminant mass reduction. The systems-level perspective provides a practical foundation for technology selection, integrated treatment-train design, and sustainable field implementation.
Https://www.sciencedirect.com/science/article/pii/S2590123026031208/pdfft?md5=04c931174df2b1e3754a5dbf2ff15bc4&pid=1-s2.0-S2590123026031208-main.pdf

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.

Mention of non-EPA documents, presentations, or papers does not constitute a U.S. EPA endorsement of their contents, only an acknowledgment that they exist and may be relevant to the Technology Innovation News Survey audience.