Entries for July 1-15, 2025

Market/Commercialization Information

REMEDIAL ACTION AT ROEBLING STEEL SUPERFUND SITE (SOL)
U.S. Army Corps of Engineers, Northwestern Division, Kansas City District, Kansas City, MO
Contract Opportunities on SAM.gov W912DQ25RA038, 2025

This is a total small business set-aside under NAICS code 562910. The U.S. Army Corps of Engineers Kansas City District requires a contractor to support the remedial actions at the Roebling Steel Superfund Site Operable Units 4 (OU4) and 5 (OU5), located in the Village of Roebling in New Jersey. The site was occupied by a steel and wire manufacturing facility from 1906 to 1982. The production of steel products resulted in the generation of significant quantities of waste materials in both liquid and solid forms. OU4 addresses removal and disposal of underground storage tanks, above-ground tanks, pits, sumps, underground piping, process dust, friable asbestos abatement, decontamination and demolition of buildings, and historic mitigation activities. OU5 addresses the remediation of site-wide soils, river and creek sediments, and groundwater. Remedial activities may include, but are not limited to, installation of a soil cap, building demolition, artifact restoration, building restoration, and construction of a new building. The award will be a Cost-Plus-Fixed-Fee contract with a five-year period of performance. Offers are due by 2:00 PM CDT on October 16, 2025.
https://sam.gov/opp/c7ed1296f71c463f8b6d1e071ed31519/view

TUBA CITY OU2 & 3 - EXCAVATION & BIO-REMEDIATION (COMBINE)
U.S. Department of the Interior, Bureau of Indian Affairs, Navajo Region, Gallup, NM
Contract Opportunities on SAM.gov 140A0925R0003, 2025

This is an Indian Small Business Economic Enterprise (ISBEE) set-aside under NAICS code 562910. The Bureau of Indian Affairs requires an environmental contractor to conduct sampling, excavation of contaminated waste, application of bioremediation, and reporting at a site in central Tuba City, Arizona, which consists of three operable units (OUs): OU-1 (the former Tuba City Motors property), OU-2 (the former Heating Plant property), and OU-3 (the BIA Roads Maintenance Yard property). For this contract, OU-1 is excluded, and only OU-2 and OU-3 will be cleaned up. Past operations at OU-2 and OU-3 resulted in contamination from total petroleum hydrocarbons, diesel, gasoline, motor oil, and NAPL, as confirmed by previous sampling. Remediation will involve direct push chemical injections into shallow soils and groundwater to reduce contamination levels and measurement of NAPL in the southern areas to evaluate remediation effectiveness. At OU-2, asbestos-contaminated soils not previously removed will be excavated and disposed of, with bioremediation treatment applied to the excavated areas prior to backfilling. Additionally, approximately 33 groundwater wells are recommended for decommissioning to reduce liability and prevent further impact to groundwater in the area, as some wells are damaged or have been dry for years; the remaining wells will continue to be monitored and sampled under a separate contract. The awarded contract will have a period of performance from the date of award through August 2026. Offers are due by 3:00 PM MDT on August 22, 2025. https://sam.gov/opp/ae4c0d363c8241b0827e67b3dc78d300/view

SATOC - 18 MILE CREEK SUPERFUND SITE REMEDIAL ACTION (SRCSGT)
U.S. Army Corps of Engineers, Northwestern Engineer Division, Kansas City District, Kansas City, MO
Contract Opportunities on SAM.gov W91DQ25SS3033, 2025

This is a sources sought notice for market research purposes only under NAICS code 562910. The U.S. Army Corps of Engineers, Kansas City District, seeks qualified small business Environmental Remediation Services firms interested and capable of conducting remedial action activities at the 18 Mile Creek Superfund Site, Operable Unit 1 (OU1), OU2, and OU4. A Single Award Task Order Contract is being contemplated to support remedial action efforts at the site, with an estimated capacity of $95,000,000 and a five-year period of performance. Work may include excavation, transportation, and off-site disposal of contaminated soils; backfilling with clean material; and restoration of residential and industrial properties, including the Flintkote Company Plant, United Paperboard, White Transportation, Upson Park, the creek channel, and residential neighborhoods along Water and Mill Streets. This notice is for informational and planning purposes only; no proposals are being requested or accepted. The solicitation is anticipated to be published in FY2026. https://sam.gov/opp/31fd554febb745a88469490eb3cd065e/view

PROJECT LABOR AGREEMENT (PLA) SURVEY FOR ONONDAGA LAKE SUPERFUND SITE OPERABLE UNIT 2
Army Corps of Engineers, Northwestern Engineer Division, Kansas City District, Kansas City, MO
Contract Opportunities on SAM.gov W912DQ26RA004, 2025

The U.S. Army Corps of Engineers, Kansas City District, is seeking comments from the construction community regarding the potential use of a Project Labor Agreement (PLA) for a large-scale remedial action project at the Onondaga Lake Superfund Site, Operable Unit 2 – Ley Creek Deferred Media Portion of the General Motors-Inland Fisher Guide Subsite, Onondaga County, New York. The project, estimated between $100,000,000 and $250,000,000, will involve soil and sediment remediation, including excavation, transportation, and disposal of approximately 153,600 cubic yards of material; dewatering; installation of surface water diversion systems; extensive site restoration; and wetland mitigation, restoration, and monitoring. The public is invited to provide input on the use of a PLA for this project by responding to the PLA Questionnaire. Completed questionnaire responses are due no later than 12:00 PM CDT on September 15, 2025.
https://sam.gov/opp/e85ba8c44c9243ff98091bb4466c17d1/view

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Cleanup News

RECORD OF DECISION KERR-MCGEE CHEMICAL CORP – COLUMBUS SUPERFUND SITE OPERABLE UNIT 3 COLUMBUS, LOWNDES COUNTY, MISSISSIPPI
EPA Region 4 Superfund Division, 226 pp, 2025

Previous investigations and cleanups at the former T.J. Moss Tie Company wood-treating facility included groundwater extraction and treatment and DNAPL recovery system, and sediment removal. The remaining mobile DNAPL and residual DNAPL located in the OU3 primary source area and the OU3 secondary source area pose a principal threat, and DNAPL serves as an ongoing source of COCs into groundwater. The selected OU3 remedy will address contaminated soil, DNAPL, and contaminated groundwater in the Southern Former Main Plant Area and soil contamination and DNAPL in the aquifer in the adjacent 3.7-acre parcel using a barrier wall isolation of source areas and phytoremediation to maintain groundwater levels with temporary groundwater extraction and treatment within the barrier wall. The operation of the extraction system constituted treatment to permanently and significantly reduce the volume and mobility of DNAPL. This selected remedy complements the previous removal, treatment, and disposal of DNAPL because the reduction in volume and mobility makes source control measures easier to implement. The extraction system will continue to be operated and discharges managed by the publicly owned treatment works (POTW) under the water pollution control permit until the barrier wall and engineered soil cover are functioning as intended, after which, supplemental groundwater pumping and treatment and discharge to the POTW, if needed, to maintain water levels as part of the remedial action. https://nepis.epa.gov/Exe/ZyPDF.cgi/P101H0JS.PDF?Dockey=P101H0JS.PDF

FLUX BASED STRATEGY FOR PFAS ASSESSMENT AND REMEDIATION
Munsey, K. | Northwest Remediation Conference, 2 April, Tacoma, WA, 25 slides, 2025

Use of PFAS-containing fire suppression foam at the Installation Restoration (IR) Site 14 at NAS Alameda resulted in significant groundwater contamination into the First Water Bearing Zone. Initial testing revealed PFOA (1,100,000 ng/L), PFOS (302,000 ng/L), and PFBS (16,000 ng/L) threatened the adjacent Oakland Inner Harbor and a proposed shoreline park. A remedial investigation was conducted. A design verification study and pilot test were initiated to evaluate a PlumeStop CAC barrier as a mitigation strategy to minimize the flow of PFAS-impacted groundwater into the harbor. An innovative, cost-effective solution to immobilize PFAS in place without producing secondary waste streams resulted in using a PlumeStop permeable reactive barrier (PRB) to achieve the objective. The 720-foot PRB was strategically placed along the shoreline in two parallel rows. Before full-scale implementation, a thorough design verification and testing phase, including lab and field testing, ensured the PlumeStop barrier would meet project goals. A column study evaluated PlumeStop concentrations (0.0%, 0.5%, and 2.0%) for PFAS adsorption. PFMs installed in monitoring wells ensured precise PRB placement and dosing while informing barrier design and performance evaluation. Two injection trailers and two direct-push rigs were deployed to inject 340,000 lbs of PlumeStop mixed with water for a liquid volume of >100,000 gals applied through 290 injection points. One year following implementation, the PRB achieved nearly 100% PFOS and PFOA reduction within the treatment zone across all three transects. Quarterly groundwater monitoring across 18 wells ensures continued barrier performance. PlumeStop has been detected only within the PRB, confirming its stability and containment effectiveness. https://pwremediation.com/wp-content/uploads/A3_Munsey.pdf
https://regenesis.com/wp-content/uploads/2019/12/RFG-187-CAS_Alameda_PFAS_06_FINAL.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 [published online 22 July 2025 before print]

A study: (1) examined the % ecological resources remaining on Rocky Flats (RF) following completion of cleanup activities; (2) compared the ecological resources (i.e. plant cover) of RF with the surrounding 10-km and 30-km bands of land; and (3) measured % natural vegetation on RF with comparable % on three other large DOE facilities that are still undergoing remediation. RF 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.

SUSTAINABLE REMEDIATION - STRATEGY, BEST PRACTICES, AND REAL WORLD APPLICATIONS
Fleri, M.A. Sustainable Remediation Forum (SURF) webinar, 30 April, 42 minutes, 2025

This presentation provides a perspective on integrating sustainability principles into remediation projects, focusing on best practices, innovative strategies, and key data collection methods that drive responsible decision-making. It explores how sustainability is applied in real-world scenarios through project case studies, highlighting successful project execution, waste minimization, resource optimization, recycling, and carbon footprint accounting.
https://www.youtube.com/watch?v=J9mK-ZeqIXc&t=2s

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Demonstrations / Feasibility Studies

VISUALIZING PFAS TRENDS AT A SOUTH DAKOTA AFFF-IMPACTED SITE
Carey, G.R., R.K. Krebs, G.T. Carey, M. Rebeiro-Tunstall, J. Duncan, G.N. Carey, and K. Rooney. | Remediation 35(3):e70023(2025)

Various visualization alternatives are demonstrated to evaluate PFAS trends at an AFFF-impacted site in South Dakota, including the use of radial diagrams, stacked bar maps, and pie charts. The study compared and contrasted visualization methods that may be used for PFAS site characterization or forensic assessments. PFAS groundwater concentration trends are first visualized based on site-wide wells with maximum PFOS + PFOA concentrations in AFFF source areas. Then, a more detailed analysis of trends, including the potential for precursor transformations to PFAAs, is presented for a smaller portion of the site where former fire training activities were conducted. The advantages of using radial diagram reference series are discussed, such as maximum source or background concentrations, to better illustrate changes along a flow path. The benefits of including pie charts on radial diagram maps to illustrate where PFAS are non-detect or exceed site cleanup criteria, particularly in support of a PFAS plume delineation, are demonstrated. Radial diagrams and stacked bar maps illustrate the relative proportion of perfluoroalkyl sulfonates and carboxylates in groundwater, which may help identify relative contributions of AFFF products derived from electrochemical fluorination versus telomerization manufacturing processes. The benefit of using select PFAS ratios on radial diagram axes to support a combined assessment of precursor transformation and PFAA production along a flow path is demonstrated. Stacked bar maps are shown to have significant advantages over pie charts for PFAS forensic analyses.
https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70023

EVALUATING NATURAL ATTENUATION OF DISSOLVED VOLATILE ORGANIC COMPOUNDS IN SHALLOW AQUIFER IN INDUSTRIAL COMPLEX USING NUMERICAL MODELS
Qamar, M.S., N. Santha, S. Taweelarp, N. Ploymaklam, M. Khebchareon, M.Z. Afridi, and S. Saenton. | Water 17(13):2038(2025)

A shallow aquifer contaminated with dissolved VOCs, including TCE, cis-DCE, and VC for over 30 years, was investigated to evaluate its potential for natural attenuation. A groundwater borehole investigation, well installation monitoring, hydraulic head measurements, slug tests, groundwater sampling, and microbial analyses were conducted to propose future groundwater aquifer management strategies. Microbial investigations identified *Proteobacteria* as the predominant group of microorganisms, indicating biodegradation potential, demonstrated by the presence of cis-DCE and VC. BIOSCREEN was used to evaluate the process of natural attenuation, incorporating site-specific parameters. A two-layer groundwater flow model was developed using MODFLOW with hydraulic conductivities obtained from slug tests. A reactive transport model, RT3D, was used to simulate dissolved TCE transport over 30 years. The modeling showed that the TCE plume continuously degraded and gradually migrated southward, generating a cis-DCE plume. The concentrations in both plumes decreased toward the end of the simulation period at Source 1 (upstream), while BIOSCREEN results confirmed ongoing natural attenuation primarily by biodegradation. The integrated MODFLOW-RT3D-BIOSCREEN approach effectively evaluated VOC attenuation and plume migration. However, future remediation strategies should consider enhanced bioremediation to accelerate contaminant degradation at Source 2 and ensure long-term groundwater quality. *This article is* ***Open Access*** *at* https://www.mdpi.com/2073-4441/17/13/2038.

TOWARDS A GOOD ENVIRONMENTAL STATUS: A 4-YEAR MONITORING STUDY ON THE CONTAMINATION OF THE BAY OF LUEBECK WITH ENERGETIC COMPOUNDS PRIOR TO MUNITIONS REMEDIATION
Bunning, T.H., J.S. Strehse, and E. Maser. | Archives of Toxicology 99:2313-2325(2025)

Two munition dumping areas in the German Baltic Sea are located in the Bay of Luebeck, where ~65,000 t of munitions were dumped in the post-World War II period. A 4-year pilot monitoring program assessed the current contamination level of the Bay of Luebeck's waters with various energetic compounds (EC) from dumped munitions and evaluated the feasibility of integrating these investigations into the monthly routine sampling program of coastal waters. Routine water sampling was expanded by direct monitoring of specific munition dumping sites in the Bay of Luebeck. The specific dumping areas were also monitored long-term using blue mussels and passive sampler systems, both of which indicate whether EC compounds are entering marine ecosystems. In all water samples collected monthly at four locations from the seabed and surface, TNT and six other EC were detected. However, only 1,3-dinitrobenzene (1,3-DNB), 2,4-dinitrotoluene (2,4-DNT), and 1,3,5-trinitro-1,3,5-triazine (RDX) were measured at average concentrations exceeding 1 ng/L. TNT water concentrations at the specific dumping areas were slightly higher (by a factor of 2-4) compared to the routine monitoring sites. At the same locations, EC were detected in a few individual blue mussel samples, with all concentrations remaining below 0.6 ng/g dry weight. EC concentrations in the passive samplers were in the one or two-digit nanogram range per passive sampler, except for 1,3-DNB, which reached up to 105 ng per passive sampler. ECs are ubiquitously distributed in the Bay of Luebeck, but their concentrations are still relatively low, even in both specific dumping areas. https://pmc.ncbi.nlm.nih.gov/articles/PMC12185565/pdf/204_2025_Article_4027.pdf

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Research

RESEARCH BRIEF 366: DEMONSTRATING A PILOT SYSTEM TO ELECTROCHEMICALLY REMEDIATE GROUNDWATER
National Institute of Environmental Health Sciences, Superfund Research Program, June 2025

SRP-funded researchers designed a scaled-up electrochemical system combining electricity with the mineral pyrite, a mineral commonly found in the environment, to continuously remove organic and heavy metal contaminants from groundwater for a year. A pilot electrochemical system was created. Then, the research team ran an electric current through the system for one year while pumping water with a mixture of sulfanilamide, chromium, and arsenic through the system. Samples of the system-treated water were collected and analyzed throughout the year. The pH of the treated water was also tested to determine if the process acidified the water. Results showed that the electrochemical system simultaneously removed 100% of all three contaminants from the groundwater, indicating that the system can remain stable and effective long-term. The combination of electricity, which degrades sulfanilamide, and pyrite adsorbing and reacting with arsenic and chromium effectively remediated the water. The treated water also remained at a neutral pH; no additional steps are needed to neutralize the water before it is discharged. The system was highly energy efficient, using only 4 to 7.3 kilowatts per hour for every cubic meter of groundwater. In comparison, other studies ranged from 0.8 to 173 kilowatts per hour for every cubic meter. https://tools.niehs.nih.gov/srp/researchbriefs/currentissue.cfm

CAFFEINE, RIBOFLAVIN AND CURCUMIN AMENDED CLAYS FOR PFAS BINDING
Xenophontos, X., J.O. Oladele, M.C. Wang, K. Lilly, L. Martinez, T.D. Phillips and P. Tamamis. Computers & Chemical Engineering 201:109215(2025)

Computations were used to screen from a pool of chemical compounds, which are either supplements or generally recognized as safe, and identified particular supplements that can be amended to clay and potentially improve its sorbing capacity for PFAS in acidic conditions. Simulations were initially used as a tool to identify promising amendments to the clay. Subsequently, simulations evaluated which selected amendments could potentially bind PFAS. Results showed that caffeine-, riboflavin-and curcumin-amended clays can, in particular instances, enhance the binding of different PFAS compared to parent clays. Experiments investigated the sorption properties of the designed systems. Caffeine-amended clay significantly enhanced GenX binding when compared to parent clay, with its binding capacity being increased from 0.15 mol/kg to 1.17 mol/kg. Caffeine-amended clay also enhanced binding for PFOS by 125%, compared to the parent clay, and for PFOA to a lesser extent. Riboflavin-amended clay also enhanced binding for GenX, PFOA, and PFOS by 120%, 23%, and 70%, respectively, compared to the parent clay. The studies provide atomistic details into their mechanisms of action. Both the novel computational library of chemical compound-amended clays and the approach utilized, combining computations and experiments, could enhance the future design of novel amended clays for other toxins.
https://www.sciencedirect.com/science/article/pii/S0098135425002194/pdfft?md5=a3a275531f73fe7e699455e09c447bdf&pid=1-s2.0-S0098135425002194-main.pdf

EFFECTIVE ELECTROCHEMICAL TRICHLOROETHYLENE REMOVAL FROM WATER ENABLED BY SELECTIVE MOLECULAR CATALYSIS
Gao, Y., W. Zhang, C. Choi, B. Shang, S. Cheon, A.F. Meese, J.H. Kim, D. Long, J. Fortner, and H. Wang
Carbon Future 1:9200015(2025)

This study presents a catalyst, comprising cobalt phthalocyanine (CoPc) molecules assembled onto multiwalled carbon nanotubes (CNTs), that can electrochemically decompose aqueously dissolved TCE into ethylene and chloride ions at record high rates with close to 100% Faradaic efficiency. Kinetics studies reveal that the rate-determining step is the first electron transfer without proton involvement. Replacing the CNT support with reduced graphene oxide (rGO) can improve the TCE treatment efficacy because of the two-dimensional nanostructure of rGO and its stronger interaction with CoPc molecules. Incorporating the CoPc/rGO catalyst into an electrified membrane filtration device demonstrated 95% TCE removal from simulated water samples with environmentally relevant TCE and electrolyte concentrations. https://www.sciopen.com/article/pdf/10.26599/CF.2024.9200015.pdf?ifPreview=0

SURFACTANT ENHANCED PFAS MASS REMOVAL FROM SOIL GROUNDWATER AND AFFF FIRE SUPPRESSION SYSTEMS

Ivey, G. and J.S. Poynor. 34th Annual International Conference on Soil, Water, Energy, and Air, 17-20 March, San Diego, CA, 37 slides, 2025

A multi-year university column study was the first attempt to understand the potential of specialized surfactants, with additives, to increase the mass PFAS removal rates at a scale using environmentally applicable reagent concentrations to achieve >700% PFOA and PFOA mass removal per application compared to water flushing applications. Favorable column study findings lead recent AFFF fire suppression system PFAS surfactant decontamination testing demonstrating a significant capacity to lower PFAS concentrations by >50,000 compared to conventional water or solvent flushing. There was no risk of PFAS rebound or contamination of the AFFF replacement fire suppression products due to residual PFAS cross-contamination, causing a negative legacy effect. https://s3.amazonaws.com/amz.xcdsystem.com/A51108D5-FA2F-2B6D-01D92AC0F47DCF3B_abstract_File2569/PresentationPDF_228_0320102739.pdf

ANALYSIS OF 6PPD-Q IN FINFISH, SHELLFISH, AND MARINE MAMMAL TISSUES

Kuo, L.-J., J. Tietsort, J.L. Bolton, J.B. Gates, M. Langness, A. Carey, S. O'Neill, and I.R. Schultz. I Chemosphere 379:144418(2025)

A study presents a workflow for the extraction and quantitative analysis of 6PPD-quinone (6PPD-Q) in complex tissues from shellfish, finfish, and marine mammals. A multi-residue extraction protocol was developed for quantitative analysis of 6PPD-Q, persistent organic pollutants (PCBs, PBDEs, organochlorine pesticides), and PAHs in tissues in a single extraction. A GC-MS/MS-based 6PPD-Q measurement was also developed. The protocol was evaluated in tissues including fish fillets, whole fish homogenates, mussels, and whale blubber. Limits of quantification of 6PPD-Q were between 0.03 and 0.12 ng/g ww; and the surrogate (6PPD-Q-d5) recoveries were ~60-100 % among matrices. Results from an initial biomonitoring study using caged mussels (*Mytilus trossulus*) and juvenile Chinook salmon (*Oncorhynchus tshawytscha*) from Puget Sound showed 6PPD-Q detection rates were at least 50%, but the concentrations were mostly

ELEVATED PFAS PRECURSORS IN SEPTAGE AND RESIDENTIAL PUMP STATIONS

Penrose, M., J. Deighton, Susan T. Glassmeyer, A. Brougham, S. Bessler, T. McKnight, and M. Ateia. I Environmental Science & Technology Letters 12(4):454-460(2025)

A study directly compared PFAS in septage and pump stations, targeting 70 PFAS compounds and employing the total oxidizable precursor (TOP) assay. Septage exhibited higher PFAS and precursors concentrations than pump stations, with median post-TOP levels of 687.5 ng/L vs 84.2 ng/L, respectively. FTCAs were fully oxidized, while diPAPs showed incomplete oxidation due to high organic loads. Septic systems function as PFAS reservoirs, increasing risks of groundwater contamination, particularly in areas with shallow aquifers. Pump stations contributed to episodic PFAS spikes, likely affecting downstream wastewater treatment. The detection of 27 PFAS compounds, including short-chain alternatives, highlights shifting contamination patterns. Findings emphasize the need for tailored analytical frameworks and pretreatment technologies to mitigate PFAS risks across decentralized and centralized wastewater systems. Integrating precursor analysis is critical for accurate risk assessment, as targeted PFAS measurements underestimate contamination. Results provide new insights into PFAS behavior in residential wastewater, guiding future mitigation efforts.

A HIGH EFFICIENCY METHOD FOR THE EXTRACTION AND QUANTITATIVE ANALYSIS OF 45 PFAS IN WHOLE FISH

Balgooyen, S., M. Scott, B.R. Blackwell, E.L. Pulster, M.B. Mahon, R.F. Lepak, and W.J. Backe. Environmental Science & Technology 59(7):3759-3770(2025)

A study describes and validates a new method for extracting PFAS from whole-body fish tissue, demonstrates that freeze-dry preservation of tissue conserves bioaccumulative PFAS, and details a method demonstration on Lake Michigan fish. Fish filets are more commonly analyzed for their significance to human health, though whole fish are useful to determine ecological impacts. The study showed that lipid removal technology produces clean extracts without the need for solid-phase extraction or evaporative concentration, which often leads to loss of some PFAS. The method achieves an accuracy of 96 ± 9% for the detection of 45 PFAS, while also offering the benefits of a simple procedure, reduced processing time, and decreased waste generation compared to multistep cleanup and concentration methods. A test of freeze-drying demonstrated that compounds detected in Great Lakes fish were retained, but volatile compounds, including sulfonamide precursors and ethanols, were lost. To demonstrate field performance, the entire method was applied to whole-fish composites from Lake Michigan. Results reveal that the PFAS concentration was driven by collection location, while the distribution of PFAS was dictated by fish species.

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General News

BIOREMEDIATION OF CHLORINATED VOLATILE ORGANIC COMPOUNDS: DOE EXPERIENCES AND LESSONS LEARNED

Looney, B.B., D.T. Newby, H.H. VerMeulen, and E.D. Fabricatore. Savannah River National Laboratory Report SRNL-STI-2025-00051, 96 pp, 2025

This systematic review examined the design, objectives, performance, and outcomes for remediation projects at DOE sites, including Savannah River, Hanford, Idaho, Mound, and Pinellas. Results were used to identify emergent themes and provide actionable insights. Standardized criteria were first developed to support the systematic review. Then, the evaluation was performed using a sequential process that was informed by local technical experts, who identified and provided the structured information that served as the basis for the evaluation. To maximize the value of the DOE cVOC bioremediation retrospective, the review strategy focused on identifying important DOE-specific experiences, trends, and lessons learned that would extend the knowledge available from these other key entities. Overarching themes that were identified are included in the report. More specific technical findings are provided in the lessons learned section of the report. The portfolio of cVOC bioremediation projects and DOE project experience has yielded significant success. Two sites have formally transitioned to a passive enhanced attenuation (EA) remedy from pump and treat, discontinuing expensive active treatment and now moving rapidly toward closure with no further action. All wells and all constituents at both EA sites are near or below MCLs. Some of the full-scale anaerobic bioremediations are also approaching ROD reviews, where they may be able to formally transition to a passive EA remedy. Within these projects, DOE has developed, tested, and deployed several innovative technologies, some of which are patented and licensed. DOE led the collaboration to develop technical guidance for implementing EA for cVOCs. The 30+ year period of DOE cVOC bioremediation experience summarized in this review can support DOE managers/decision makers as well as contractors in their project management, project design and field operations responsibilities for current and future cVOC bioremediation. https://www.osti.gov/servlets/purl/2545756

PRACTICAL GROUNDWATER SCIENCE GUIDES: PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

EPA Office of Research and Development, EPA 600/R-25/153, 38 pp, 2025

This report provides easily digestible information for site assessment and remediation practitioners who work on PFAS-contaminated sites. Topics covered include PFAS evaluation of site-specific groundwater vulnerability from PFAS-impacted soil, groundwater sampling for PFAS, and ways that surface chemistry and surfactant properties of some PFAS may impact their transport and fate. The document compiles information from three technical briefs that were originally released internally by EPA. The intended audience includes geologists, hydrogeologists, risk assessors, RPMs, and others who work on PFAS-contaminated sites. Users should have a basic understanding of PFAS. The information provided in this document will also be of use to stakeholders such as state and federal regulators, Native American tribes, consultants, contractors, and other interested parties.
https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=366758&lab=CESER&simplesearch=0&showcriteria=2&sortby=pubDate&timstype=&datebeginpublishedpresented=06/15/2019&searchall=remediation

PRACTICAL PFAS IMMOBILIZATION IN THE VADOSE ZONE BY EXTREME SOIL VAPOR EXTRACTION: CONCEPTUAL UNDERSTANDING, MODELING, AND COST ANALYSIS

Divine, C., B. Guo, M. Brusseau, B. Kinser, and C. Shepherd.
Groundwater Monitoring & Remediation 45(3):69-76(2025)

Practical and cost-effective technologies are needed for PFAS sources in the vadose zone to prevent continued migration from soil to groundwater. Many PFAS are characterized by high air-water interfacial adsorption coefficient (K_{aw}) values, and therefore, the air-water interface exerts a strong control on their transport. As soil moisture decreases in the vadose zone, the air-water interfacial area generally increases. As a result, the effective retention of some PFAS can be increased by 100-fold or more in some cases with relatively modest reductions in soil moisture content. Quantitative modeling and conceptual costing analysis confirm the viability of a two-pronged PFAS immobilization strategy where (1) a surface cap is installed to prevent water infiltration and (2) extreme soil vapor extraction is applied to dry the soil, which reduces or eliminates downward water flux and increases PFAS retention. Modeling results show that water flux and PFAS mass discharge to groundwater can be essentially eliminated using this approach. Even if recharge is not completely prevented, simulations show PFAS mass discharge to groundwater will still be greatly reduced due to the significantly enhanced PFAS retention. The equipment required for this approach is commercially available, and installation costs are modest and predictable. Based on this analysis, future pilot testing and field demonstrations may be warranted.

A LONG WAY TO GO: CHALLENGES AND STRATEGIES FOR MANAGING PFAS IN GROUNDWATER

Newell, C.J., J.S. Cook, D.T. Adamson, P.B. Hatzinger. I Remediation 35(4):e70028(2025)

A comprehensive analysis of PFAS groundwater remediation approaches is provided based on an understanding of the distinct chemical properties and transport behavior of PFAS, and the limitations of existing treatment technologies. Remediation strategies for PFAS sources and plumes are evaluated through technical, economic, and social lenses, with an emphasis on comparing conventional pump-and-treat systems with in situ permeable sorptive barriers. Modeling of potential remedial alternatives and associated costs and benefits for the >10,000 hypothetical contaminated sites across the U.S. reveals counterintuitive findings regarding optimal strategies. While high-cost, "intensive" remedial actions can achieve greater contaminant reduction at each site, analysis demonstrates that "efficient" strategies—focused on rapid containment at a greater number of sites—may achieve greater overall risk reduction nationwide with substantially lower costs. A strategic approach employing containment technologies in the near term (15 years), followed by targeted mass removal as destructive technologies improve, could be the most promising for addressing the expected scale of PFAS contamination. Findings challenge conventional remediation paradigms and suggest a necessary reevaluation of how limited resources should be allocated across contaminated sites. Continued research into in situ destructive technologies remains important to help improve long-term outcomes at PFAS sites, while present efforts should prioritize risk management through containment and exposure prevention.

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 Remediation and Technology Innovation at adam.michael@epa.gov or (703) 603-9915 with any comments, suggestions, or corrections.

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