Entries for November 1-15, 2025

Market/Commercialization Information

LONE STAR ARMY AMMUNITION PLANT (LSAAP) HIGH EXPLOSIVES BURNING GROUND (HEBG) REMEDIATION (SRCSGT)
U.S. Army Corps of Engineers, Southwestern Engineer Division, Tulsa District, Tulsa, OK
Contract Opportunities on SAM.gov W912BV26S2501, 2025

This is a sources sought notice for market research purposes only. The U.S. Army Corps of Engineers, Tulsa District, seeks survey responses from interested firms--including small, Section 8(a), Historically Underutilized Business Zones (HUBZone), Service-Disabled Veteran-Owned, or Woman-Owned Small Businesses--qualified to perform Environmental Remediation Services (ERS) under NAICS code 562910at the 16-acre High Explosives Burning Ground (HEBG), which is part of the Lone Star Army Ammunition Plant (LSAAP) in Bowie County, Texas. The HEBG is littered with burnt ash with metallic debris, munitions and explosives of concern (MEC), MEC debris, and other miscellaneous trash from HEBG operations. The vertical extent of artificial fill ranges in depth from 6 inches to 8.5 feet. Soil COCs include aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium, zinc, 1,3,5-trinitrobenzene, HMX, and RDX. COC concentrations detected in groundwater were below the TCEQ Texas Risk Reduction Program residential assessment levels. Groundwater does not require further evaluation. Remediation will entail soil excavation, sifting to remove MEC and MEC debris, fuzes, sampling and analysis, transport and disposal of hazardous and non-hazardous waste, backfill, compaction, grading for proper drainage, and establishment of vegetative cover. Survey responses are due by 5:00 PM EST on December 29, 2025. https://sam.gov/workspace/contract/opp/52def99ba33d478ca119c9f2886faa5a/view

FY26 GUIDELINES FOR BROWNFIELD PROGRAM GRANTS
Environmental Protection Agency, Funding Opportunities, 2025

EPA's Brownfields Program provides funds to empower states, communities, tribes, and nonprofit organizations to prevent, inventory, assess, clean up, and reuse brownfield sites. The closing date for applications for all of these opportunities is January 28, 2026.

- EPA-OLEM-OBLR-25-05: FY26 Guidelines for Brownfields Assessment Grants (Assessment Coalition Grants). EPA anticipates 39 awards for brownfield assessment for a total estimated program funding of $58.7M. https://simpler.grants.gov/opportunity/8c896c27-5810-4b7d-adf8-3f481b5beb89
- EPA-I-OLEM-OBLR-25-03: FY26 Guidelines for Brownfields Multipurpose (MP) Grants. EPA anticipates 20 awards for brownfield assessment for a total estimated program funding of $20M. https://simpler.grants.gov/opportunity/c659753f-fb18-4641-8574-da9eb7f1244e
- EPA-I-OLEM-OBLR-25-07: FY26 Guidelines for Brownfields Cleanup Grants. EPA anticipates 26 awards for brownfield assessment for a total estimated program funding of $107M. https://simpler.grants.gov/opportunity/e0217543-899c-48bd-89d6-4c8944ce7e92
- EPA-I-OLEM-OBLR-25-04: FY26 Guidelines for Brownfield Assessment Grants (Community-wide Assessment Grants). EPA anticipates 70 awards for brownfield assessment for a total estimated program funding of $35M. https://simpler.grants.gov/opportunity/4f27cf76-9a7f-40ac-8c14-7a7838479bfb
- EPA-I-OLEM-OBLR-25-06: FY26 Guidelines for Brownfield Assessment Grants (Community-wide Assessment Grants for States and Tribes). EPA anticipates 18 awards for brownfield assessment for a total estimated program funding of $35M. https://simpler.grants.gov/opportunity/ba2a1c08-2050-4131-8f12-2c42e056b12d

F -- MID-PLUME GROUNDWATER REMEDIATION AT THE WALTON & LONSBURY SUPERFUND SITE, ATTLEBORO, MASSACHUSETTS (PRESOL)
U.S. Army Corps of Engineers, North Atlantic Engineer Division, New England District, Concord, MA
SOL: W912WJ26RA001

When this solicitation is released sometime in December 2025, it will be competed as a total small business set-aside under NAICS code 562910. The U.S. Army Corps of Engineers (USACE) New England District intends to issue a solicitation for work at the W&L Superfund Site. The Site is a former electroplating facility that operated from 1940 to 2007. Since 2010, several environmental investigation and remediation activities have been performed at the site, including removal of W&L facility buildings and residual waste materials, excavation and disposal of contaminated site media, and installation of an engineered cover behind residences along Paulette Lane and North Avenue to prevent upwelling of chromium-contaminated groundwater to the ground surface and to prevent direct exposure to chromium-contaminated soil. A PRB was constructed on the downgradient edge of the cover, with the goal of using zerovalent iron (ZVI) to reduce Cr(VI) to trivalent chromium in groundwater before it discharges into Bliss Brook southeast of the W&L property. The government intends to award a single Firm-Fixed Price (FFP) service contract set-aside for small businesses. There is no solicitation at this time. https://sam.gov/workspace/contract/opp/b82e75976c97479db979652c55ba1025/view

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Cleanup News

ASSESSING THE IMPACTS OF PERMEABLE REACTIVE BARRIER INSTALLATION IN OVERBURDEN AND FRACTURED BEDROCK
Ashley, E., N. Castonguay, and R. Wymore. | AEHS Foundation 41st Annual International Conference on Soils, Sediments, Water and Energy 20-23 October, Amherst, MA, 24 slides, 2025

The Greenwood Street Landfill is an abandoned rock quarry where CVOC contamination, including DNAPL, is present in the underlying bedrock. The CVOC plume extends off-site in bedrock and overburden, resulting in potential vapor intrusion at a nearby residential complex. Offsite migration was addressed through the installation of a permeable reactive barrier (PRB) at the property line, including 29 bedrock, 55 deep overburden, and 10 shallow overburden injection wells. A total of 2,082 gals of emulsified vegetable oil (EVO), 67,710 lbs of zero valent iron (ZVI), and 46,236 lbs of sand proppant were emplaced during the bedrock fracturing program. A total of 1,934 gals of small-droplet EVO, 310 gals of large-droplet EVO, 3,855 gals of sodium lactate, 3,460 lbs of sodium bicarbonate, and 425 L of bioaugmentation culture were injected during the low-pressure bioremediation injection program. The very large volumes (total of 56,257 gal) injected into the limited pore and void space required timely evaluation of the distribution of the amendments and the impacts of the PRB construction. Post-construction monitoring included efforts to assess the downgradient distribution of the amendments and potential plume migration impacts approaching the residential apartment complex. The presentation reviews the bedrock and overburden hydrogeologic setting, PRB design and construction, the monitoring program performed to assess the impacts of the large volume injection, observed downgradient impacts, initial contaminant degradation, and lessons learned.
https://s3.amazonaws.com/amz.xcdsystem.com/A51108D5-EA2F-2B6D-01D92AC0F42DCE3B_abstract_File26129/PDFofPresentation_40_1021084324.pdf

40 YEARS OF SOIL BENTONITE SLURRY WALL RESEARCH & EXPERIENCE: PRACTICAL IMPLICATIONS FOR WASTE CONTAINMENT
Evans, J. | AEHS Foundation 41st Annual International Conference on Soils, Sediments, Water and Energy 20-23 October, Amherst, MA, 22 slides, 2025

This presentation reviews studies on important issues relating to the use of soil-bentonite (SB) slurry trench cutoff walls in remediation and identifies the practical implications of the research and practice experience. Specifically, the state of stress within the wall is substantially lower than what would be calculated using geostatic stress assumptions. This finding is important as it has been demonstrated that the hydraulic conductivity can be highly stress-dependent, and could be significantly underestimated in the lab if geostatic stresses are used in testing. Data on primary and secondary consolidation show a continued decrease in stress with time. Studies of the durability of SB under wet/dry cycles, such as on sites with a fluctuating water table, show that hydraulic conductivity can increase several orders of magnitude with only a few cycles of wetting and drying. Data on diffusion through SB and osmotic behavior are available for use in contaminant transport modeling. Numerous project-specific and research compatibility studies of SB with a wide range of contaminants have provided a good understanding of the underlying mechanisms, such that an examination of the site groundwater chemistry can be used to develop expectations regarding compatibility in advance of site-specific testing. The paper includes an evaluation of the practical implications of research and case studies.
https://s3.amazonaws.com/amz.xcdsystem.com/A51108D5-EA2F-2B6D-01D92AC0F42DCE3B_abstract_File26129/PDFofPresentation_94_1018023051.pdf

FIELD EXPERIENCE IN THE USE OF SURFACTANTS FOR IMPROVED REMEDIATION
Pac, T., M. Lee, D. Socci, W. Caldicott, T. Eilber, and P. Dombrowski. | AEHS Foundation 41st Annual International Conference on Soils, Sediments, Water and Energy 20-23 October, Amherst, MA, 25 slides, 2025

This presentation illustrates field implementations where surfactant supplementation using S-ISCO® and SEPR® approaches increased effectiveness and decreased the cost of ongoing treatment technologies and remedial programs. The inclusion of surfactants can enhance contaminants' solubility and significantly improve the efficiency of treatment programs using free product recovery, sparge/vent, chemical oxidation, and bioremediation treatment approaches. The use of surfactants can affect improved NAPL treatment and remedial effectiveness for a variety of processes through:

- Enhancing desorption of trapped highly sorbed or low-conductivity materials.
- Providing emulsification and transferring NAPL into the aqueous phase.
- Reducing viscosity, increasing the mobility of otherwise immobile materials.
- Increasing interfacial tension ("slipperiness"), allowing access to trapped NAPL, and low-flow zones.
- Providing buoyancy NAPL to facilitate active recovery.
- Optimizing delivery of remedial injectate solutions to decrease injection pressures and improve subsurface distribution.

Surfactants provide another tool in the remedial toolbox for the remediation practitioner. https://s3.amazonaws.com/amz.xcdsystem.com/A51108D5-EA2F-2B6D-01D92AC0F42DCE3B_abstract_File26129/PDFofPresentation_30_1020082515.pdf

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Demonstrations / Feasibility Studies

A SIX-YEAR FIELD TEST OF EMULSIFIED ZEROVALENT IRON FOR TREATING SOURCE ZONE CHLORINATED SOLVENTS AT A SUPERFUND SITE
Su, C. | Presentation to the Department of Agricultural and Biological Engineering, University of Florida, 26 March, 33 slides, 2025

A 1994 spill at the Marine Corps Recruit Depot Superfund site contaminated groundwater with PCE. Containment and treatment of the source zone were critical in controlling the migration of the contaminant plume. Emulsified zerovalent iron (EZVI) was injected into the treatment areas in October 2006, and performance monitoring was conducted through October 2012. The field demonstration consisted of two side-by-side treatment areas to evaluate the performance of EZVI to remediate a shallow (< 6 m) PCE DNAPL source area and evaluate two injection technologies for EZVI, pneumatic injection and direct injection. In the pneumatic injection plot, 2,180 L of EZVI containing 225 kg of iron, 856 kg of corn oil, and 22.5 kg of surfactant were injected to remedy ~38 kg of CVOCs. In the direct injection plot, 572 L of EZVI were injected to treat ~ 0.155 kg of CVOCs. Soil samples were analyzed to evaluate changes in contaminant mass. Significant reductions in PCE and TCE concentrations were observed in downgradient wells with corresponding increases in degradation products, including significant increases in ethene. In the pneumatic injection plot, there were significant reductions in the downgradient groundwater mass flux values for chlorinated ethenes (> 58%) and a significant increase in the mass flux of ethene (628%). There were significant reductions in total CVOC mass (78%); an estimated reduction of 23% in the sorbed and dissolved phases, and a 95% reduction in the PCE DNAPL mass. Significant increases in dissolved sulfide, volatile fatty acids (VFA), and total organic carbon (TOC) were observed, and dissolved sulfate and pH decreased in many wells. The effective remediation may have been accomplished by a combination of abiotic dechlorination by nano iron and biological reductive dechlorination stimulated by the oil in the emulsion.
https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=366135&lab=CESER&simplesearch=0&showcriteria=2&sortby=pubDate&timstype=&datebeginpublishedpresented=06/15/2019&searchall=TCE

CUTTING THE CHAIN: INNOVATION TO DESTROY PFAS IN WASTEWATER
Baker, J. and E. Hadnagy. University of Washington Tacoma Zoom Virtual Workshop, 21 November, 131 minutes, 2025

A project combined foam fractionation and hydrothermal alkaline treatment to remove and destroy PFAS in wastewater, providing a critical tool to reduce PFAS loadings to the environment. PFAS present in the filtrate produced during solids dewatering were isolated and destroyed. The pilot-scale technology demonstration at the Tacoma Central WWTP was paired with bench-scale treatability studies and rigorous, fundamental research experiments conducted to elucidate reaction mechanisms, evaluate matrix effects, and confirm that no harmful byproducts are formed. By leveraging existing wastewater infrastructure, the innovative treatment process represents a significant opportunity to permanently prevent PFAS from entering the environment. https://www.youtube.com/watch?v=Oq4wjDR0ID0

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) MASS FLUX AND MASS BALANCE AT AN AQUEOUS FILM-FORMING FOAM RELEASE SITE IN SEMIARID EASTERN NEW MEXICO, USA
Gray, E.L., S.E. Potteiger, T.D. Brannon, S.B. Norton, J. Cho, and M.D. Annable.
Journal of Contaminant Hydrology 272:104550(2025)

Passive flux meters (PFMs) were used to characterize groundwater chemistry mass flux and Darcy flux in PFAS-contaminated groundwater from AFFF use at a semi-arid site with a thick (> 90-m) unsaturated zone. PFAS mass discharge (PFAS mass flux integrated over a control plane) in groundwater downgradient from several PFAS release areas was calculated using PFM results. In groundwater downgradient from fire-training areas, total PFAS mass discharge (summed across 14 compounds) was estimated to be between 6.0 and 31 g/day in 2020 and between 5.9 and 23 g/day in 2021. Site-specific documentation, generic information on AFFF properties, and literature values of PFAS concentration in AFFF were used to estimate site-specific PFAS-application rates at fire-training areas and compared to groundwater PFAS-discharge rates. Results suggest that transformation processes (exact pathways unknown) have led to increased discharge of measured PFAS in groundwater relative to initial AFFF formulations. The mass balance approach has broad applicability as a high-level approach that can provide insight into PFAS transport at AFFF sites.

A METHOD FOR EVALUATING THE EFFECTS OF GENTLE REMEDIATION OPTIONS (GRO) ON SOIL HEALTH: DEMONSTRATION AT A DDX-CONTAMINATED TREE NURSERY IN SWEDEN
Drenning, P., Y. Volchko, A. Enell, D.B. Kleja, M. Larsson, and J. Norrman.
Science of The Total Environment 948:174869(2025)

An accessible, scientific method for soil health assessment was developed and demonstrated for a field experiment at a DDX-contaminated tree nursery site to evaluate the relative effects of gentle remediation options (GRO) on soil health (i.e., the 'current capacity' to provide ecosystem services [ES]). For the set of relevant soil quality indicators (SQI) selected using a simplified logical sieve, GRO treatment had highly significant effects on many SQI according to statistical analysis due to the strong influence of biochar amendment on the sandy soil and positive effects of nitrogen-fixing leguminous plants. The SQI were grouped within five soil functions, and the relative effects on soil health were evaluated compared to a reference state (experimental control) by calculating quantitative treated-SF indices. Multiple GRO treatments are shown to have statistically significant positive effects on many SF, including pollutant attenuation and degradation, water cycling and storage, nutrient cycling and provisioning, and soil structure and maintenance. The SF were, in turn, linked to soil-based ES to calculate treated-ES indices and an overall soil health index (SHI). The experimental GRO treatment of the legume mix with biochar amendment and the grass mix with biochar amendment resulted in statistically significant soil health improvements, with overall SHI values of 141% and 128%, respectively, compared to the reference state of the grass mix without biochar (set to 100%).

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Research

OVERCOMING THE REACTIVITY-STABILITY CHALLENGE IN WATER TREATMENT CATALYST THROUGH SPATIAL CONFINEMENT
Wan, Z., S.H. Chae, A.F. Meese, O. Nwokonkwo, L. Arrazolo, K.L. Yip, Ma X, Liu S, Muhich C, Wang D, Wei H., and Kim JH. (2025). Nature Communications 16:9672(2025)

This study demonstrates that spatial confinement of catalysts at the angstrom scale can significantly enhance the stability of iron oxyfluoride (FeOF), a highly efficient catalyst for advanced oxidation. A catalytic membrane was fabricated by intercalating FeOF catalysts between layers of graphene oxides. In flow-through operation, the catalytic membrane maintained near-complete removal of neonicotinoids for over two weeks by effectively activating H_2O_2 to generate •OH. Catalyst deactivation was significantly mitigated by spatially confining fluoride ions leached from the catalyst, which was identified as the primary cause of catalytic activity loss. The angstrom-scale membrane channels effectively reject the majority of natural organic matter via size exclusion, thereby preserving radical availability and sustaining pollutant degradation under practical conditions. This innovative strategy for enhancing catalyst stability can be potentially applied to other existing catalysts developed for water treatment applications. *This article is* ***Open Access*** *at* https://www.nature.com/articles/s41467-025-64684-5.

ENHANCING ARSENATE ADSORPTION KINETICS IN IRON(III)-CROSSLINKED CHITOSAN BEADS
Bertho, G.G., O. Nwokonkwo, D.R. Judd, T.M. Budnyak, C.L. Muhich, and J.B. Zimmerman. Chemical Engineering Journal 524:169327(2025)

A study investigated parameters impacting the adsorption kinetics of iron(III)-crosslinked chitosan (Fe-Ch) beads and assessed methods to improve their performance. Batch adsorption experiments and molecular dynamics simulations demonstrated that the identity of anions present during synthesis plays a significant role in the final structure and degree of crosslinking of the beads. Acetate in the synthesis led to a lower degree of crosslinking and higher surface area, enhancing adsorption kinetics. In addition, glycine in the synthesis led to the highest adsorption rates, as its interaction with iron increased the hydrophilicity of the beads and may provide a coordination environment that has a higher affinity for arsenate than crosslinked chitosan, evidenced by density function theory calculations. The impact of drying techniques was compared to the adsorption performance. Freeze-dried beads were rate-limited by chemisorption, while air-dried beads were rate-limited by intraparticle diffusion until the beads reached a swollen state. With the approaches evaluated in this study, the pseudo-second-order rate constant of Fe-Ch beads increased by 24-fold compared to literature studies without altering selectivity, enhancing their suitability for As(V) remediation.

INCINERATION OF PERFLUOROOCTANOIC ACID LEADS TO REGENERATION OF SMALLER PERFLUOROCARBOXYLIC ACIDS
Rocchio, C., J.M. Mattila, S. Sharma, J.D. Krug, G. Kogekar, W.R. Roberson, J.H. Offenberg, K.D. Pennell, W.P. Linak, and C.F. Goldsmith.
Journal of Physical Chemistry A 129(35):8160-8169(2025)

This study demonstrates that PFOA destruction in a pilot-scale incinerator leads to a mixture of smaller PFCAs. Chemical ionization mass spectrometry was used to measure PFCA concentrations ranging from C2 to C9. The actual yield of PFCAs depended upon the location of PFOA injection and the peak temperature experienced within the furnace. A chemical kinetic mechanism was developed to explain the results. Two different pathways were considered: a low-temperature pathway that proceeds through a short-lived α-lactone intermediate and a high-temperature pathway that proceeds through cleaving a C-C bond in the alkyl backbone. Theoretical modeling of PFOA incineration at peak temperatures of ~1130 and ~1020 K predicted the formation of trifluoroacetic acid and other small PFCAs.

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.
Environmental Science & Technology 59(42):22940-22949(2025)

To determine the potential of solids to protect contaminants from oxidation, a study measured the stoichiometric efficiency (i.e., moles of contaminant transformed per mole of sulfate radicals [$SO_4^{\bullet-}$]) for a homologous series of chlorinated benzenes using solid-to-water ratios approaching subsurface conditions. 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 (i.e., 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 (i.e., the octanol-water partition coefficient, K_{OW}), persulfate dosage, and particulate organic matter content.

PROLONGED NATURAL ATTENUATION OF N-NITROSAMINES IN GROUNDWATER–SOIL SYSTEMS: INSIGHTS INTO KINETICS, PATHWAYS, AND DEGRADATION MECHANISMS FROM MICROCOSM EXPERIMENTS
Chen, Y., J. Xia, H. Huang, Y. Ding, Y. Shan, S. Qi, G.-G. Ying, W. Chen, and J.-L. Zhao.
Environmental Science & Technology 59(41):22157-22167(2025)

Microcosm experiments were conducted to investigate the half-lives ($T_{1/2}$s) of five representative N-nitrosamines in groundwater-soil systems under varying redox conditions, environmental matrices, and carbon source additions. The $T_{1/2}$s of *N*-nitrosamines exceeded 150 days in groundwater-soil systems with no contamination history and in groundwater environments without soil matrices. However, environmental matrices with long-term exposure to *N*-nitrosamines contamination demonstrated a shorter $T_{1/2}$, ranging from a few to several dozen days. *N*-nitrosamines decay rates under aerobic conditions were ~2x those under anaerobic conditions. Microbial cometabolism was the primary removal mechanism, producing secondary amines, nitrate, and nitrite observed as intermediates, and ammonium as the main product. Variations in microbial community composition were observed across experimental conditions, underscoring the role of specific microbial taxa such as Nitrospirota, Patescibacteria, and Zixibacteria in the degradation process. By integrating product profiling with microbial analysis, this study offers a comprehensive mechanistic understanding of *N*-nitrosamines degradation.

CROP STRAW BIOCHAR ENHANCES HYDROCARBON ADSORPTION IN GROUND WATER
Pathy, A., M. Anne Naeth, and Scott X. Chang. Chemosphere 393:144775(2025)

A study evaluated the simultaneous adsorption capacity of canola straw biochar for 12 hydrocarbon contaminants in groundwater from a northern peatland to simulate the simultaneous contamination of multiple hydrocarbon classes in a complex aqueous matrix. In the lab, canola straw biochar remediated BTEX, linear-chain aliphatics, and PAHs from groundwater. BTEX concentrations significantly decreased with the application of 1 g/L biochar, achieving a remediation efficiency of >95% within 7 days. Increasing application rates enhanced remediation efficiency, exceeding 99% at a 2 g/L application rate. X-ray photoelectron spectroscopy, BET/CO_2 porosimetry, and Fourier transform infrared spectroscopy corroborated theoretical isotherm and kinetic models, indicating that functional groups on the biochar surface play a crucial role in adsorption, primarily through hydrophobic and π- πinteractions. Results enhance understanding of adsorption mechanisms for multiple hydrocarbon classes in complex matrices under controlled lab conditions, and positioned canola straw biochar as an effective remediation technique for hydrocarbon water treatment.

NATIONWIDE ESTIMATE OF VOLATILE PER- AND POLYFLUOROALKYL SUBSTANCE (PFAS) EMISSIONS FROM U.S. LANDFILLS VIA LANDFILL GAS
De la Cruz, F.B., I.A. Titaley, Y. Wang, J.A. Field, and M.A. Barlaz.
Environmental Science & Technology 59(46):24899-24908(2025)

A study aimed to characterize volatile PFAS in landfill gas (LFG) and estimate the annual mass of volatile PFAS released from U.S. landfills. LFG samples were collected from 30 landfills in 17 states represented by different annual precipitation regions. PFAS concentrations varied by orders of magnitude, with a median concentration of 19,000 ng/m^3. Fluorotelomer alcohols, 6:2 and 8:2 FTOH, are the dominant PFAS in LFG, accounting for > 95% of the total PFAS concentration. Minor components such as fluorotelomer olefins are also present, with concentrations ranging from 0–28,000 ng/ m^3 and a median of 316 ng/ m^3. The variability in PFAS concentrations was influenced by precipitation, as well as temporal and site-specific factors. By coupling the median concentration of PFAS with an estimate of LFG emissions, it is estimated that 836 kg/yr of volatile PFAS are emitted from U.S. landfills in uncollected gas with a 95% confidence interval (2.5% to 97.5% of the distribution) of 15-5,590 kg/yr. This estimate is comparable to ~600 kg of PFAS released annually into landfill leachate.

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General News

RECOMMENDED APPROACH FOR ESTIMATING PCE/TCE ABIOTIC FIRST-ORDER REDUCTIVE DECHLORINATION RATE CONSTANTS IN CLAYEY SOILS UNDER ANOXIC CONDITIONS
Schaefer, C., Z. Nguyen, D. Tran, C. Werth, T. Blount, S. Dai, and G. Kumar. ESTCP Project ER20-5031, 7 pp, 2025

The overall goal of this work was to demonstrate and validate an innovative approach for assessing and quantifying naturally occurring abiotic and biotic dechlorination reactions in low-permeability clays. Such an approach would guide remedial project managers and regulators with respect to assessing naturally occurring abiotic dechlorination at DoD sites. The project employed multiple methods and techniques demonstrated in previous lab and field projects to attain insight into a cost-effective and easily implementable in situ methodology that can be used to assess the extent to which naturally occurring abiotic and biotic dechlorination processes are occurring within clays (via a first-order rate constant). The in situ approach was utilized at eight sites selected for this project. The use of 1% (v/v) HCl extractions and X-ray diffraction for mineral composition provided information needed to estimate TCE abiotic reductive dechlorination in clays.
https://serpub-prod-0001-124733793621-us-gov-west-1-s3-us-gov-west-1.amazonaws.com/s3fs-public/2025-11/ER20-5031%20Guidance%20Document.pdf?VersionId=1s9hwIFyECN0Z8EnYt3yLD9NUteBlKv

A NOVEL METHOD FOR DETECTING PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) BY COLORIMETRIC EMULSION EXTRACTION
Hill, W.C., C.K. Mack, T.W. Seguine, T.M. Amos, M.L. Ballentine, and A.J. Kennedy.
Chemosphere 380:144462(2025)

A novel emulsion extraction methodology is introduced that isolates PFAS from aqueous media. When paired with colorimetric techniques, the method facilitates rapid detection of PFAS at concentrations ranging from ppm to ppt within minutes. Visual (naked eye) colorimetric detection of PFOA below 30 ppt is demonstrated. This semi-quantitative emulsion extraction method represents a new means for concentrating PFAS for detection and remediation purposes in a cost-effective and scalable manner. The cost to construct the prototype kit, which is indefinitely reusable using commercially sourced components and 3D printed housing, was less than $150, with material costs per test of less than $2. When fully developed, the kit may be deployed to facilitate efficient screening for PFAS to expedite assessments in the field or in facilities, allowing for rapid identification of sites requiring more detailed laboratory analysis.

OVERVIEW OF PFAS GAS PHASE AND PARTICULATE TRANSPORT PATHWAYS RELEVANT TO ENVIRONMENTAL RELEASE AND REMEDIATION SITES
Lutes, C., S. Park, J. Ford, E. Escobar, G. Buckley, K. Johnson, J. Hatton, L. Levy, J. Zenobio, and D. Chiang. | AEHS Foundation 41st Annual International Conference on Soils, Sediments, Water and Energy 20-23 October, Amherst, MA, 39 slides, 2025

The authors draw on their experience with ongoing research and project sites and current literature to describe both gas-phase and particulate-phase PFAS transport in the subsurface and atmosphere. The presentation provides a broad understanding of potential air transport pathways relevant to PFAS release sites, including manufacturing facilities and installations where aqueous film-forming foam was used. A range of PFAS, including currently regulated, precursor compounds, and those that may be regulated in the future, are considered in terms of their physical properties, such as volatility and polarity. Potential PFAS transport pathways discussed include soil vapor migration and intrusion, volatilization from groundwater that seeped into basements, volatilization or sublimation to ambient air, particle suspension from foaming, and particulate suspension from open soil. The influence of common remedial, treatment, or construction activities on the pathways was also considered, including potential effects when employed for remediating traditional compounds. Common remedial technologies considered include soil vapor extraction, air stripping, biological treatment, thermal treatment, and excavation, as well as common construction activities, such as dewatering, excavation, and grading. Possible monitoring and control strategies for PFAS migration pathways are discussed. The applicability of previously developed EPA guidance to PFAS is reviewed for evaluating air emissions and transport of other contaminant classes. Common global ambient and background indoor air concentrations of PFAS are also described.
https://s3.amazonaws.com/amz.xcdsystem.com/A51108D5-FA2F-2B6D-01D92AC0F42DCF3B_abstract_File26129/PDFofPresentation_45_1020085429.pdf

ALTEMIS: NEXT-GENERATION IN SITU REAL-TIME GROUNDWATER MONITORING STRATEGIES
Wainwright, H. | Pacific Northwest National Laboratory RemPlex seminar, 4-6 November, Richland, WA, 21 minutes, 2025

The Advanced Long-Term Monitoring Systems (ALTEMIS) project is developing an innovative paradigm of long-term monitoring based on in situ groundwater sensors, geophysics, drone/satellite-based remote sensing, reactive transport modeling, and AI to improve effectiveness and robustness, while reducing the overall cost. As a part of this project, an in situ real-time groundwater long-term monitoring framework was developed based on various sensors and data analytics methods. Rather than relying on one single metric, the approach provides multiple lines of evidence to ensure the system stability: the groundwater table and its gradient that governs the migration speed and direction of the contaminant plume, and in situ measurable geochemical parameters (specific conductance, pH, and others) for detecting changes in contaminant mobility. In addition, machine learning algorithms were developed to improve the spatiotemporal interpolation of groundwater tables and contaminant concentrations by exploiting proxy variables such as in situ sensors and geospatial layers, and to detect anomalies by computing the difference between near-future forecasting and measurements. To accommodate noisy and drifting sensor data streams, algorithms were also developed for automated outlier removal and drift correction. The framework was demonstrated at the Savannah River Site F-Area.
See times 1:01-1:20: https://www.pnnl.gov/projects/remplex/2025-summit/technical-sessions/artificial-intelligence
Slides: https://www.pnnl.gov/sites/default/files/media/file/2025%20RemPlex%20-%20Technical%20Session%208%20-%20Haruko%20Wainwright%20-%20ALTEMIS.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.

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