Entries for March 16-31, 2026

Market/Commercialization Information

F -- EIGHTEEN MILE CREEK SATOC (SOL)

U.S. Army Corps of Engineers, Northwestern Engineer Division, Kansas City District, Kansas City, MO
Contract Opportunities on SAM.gov W912DQ26RA031, 2026

This is a total small business set-aside under NAICS code 562910. The U.S. Army Corps of Engineers, Northwestern Engineer Division, requires recurring remedial action efforts at the Eighteen Mile Creek Superfund Site, Operable Unit 1 (OU1), OU2, and OU4, in Niagara County, New York. The overall objective is to perform excavation and transportation, and disposal of lead-contaminated soil that exceeds the Record of Decision (ROD) specified cleanup levels. The award will be a Single Award Task Order Contract (SATOC). The SATOC will provide the Government with a continuity of personnel and institutional knowledge for developing a streamlined response and flexible vehicle for cost-effective soils remediation. It may require, but is not limited to, designs, interim actions, remedial actions, short-term operation and maintenance, laboratory management, reports, and any other actions necessary to implement the soils remedy at the site. Offers are due by 2:00 PM CDT on May 26, 2026.
https://sam.gov/workspace/contract/opp/4eff4fc4f7df4fe6a51bfbfa6e21daed/view

F -- F108--32C24126Q0324 BEDFORD RADIATION DECOMMISSIONING (COMBINE)

U.S. Department of Veterans Affairs, 241-Network Contract Office 01, Togus, ME
Contract Opportunities on SAM.gov 36C24126Q0324, 2026

This is a service-disabled veteran-owned small business set-aside under NAICS code 562910. The U.S. Department of Veterans Affairs requires a contractor to perform radiological decommissioning of approximately 20 rooms (approximately 6,300 total square feet) in Buildings 17, 18, 70, and 79 at the VA Bedford Healthcare System, Bedford Campus, in Bedford, Massachusetts. Services include review of a historical site assessment and completion of a radiological final status survey in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The contractor and any subcontractors must be licensed by the Nuclear Regulatory Commission or the Commonwealth of Massachusetts to perform decommissioning work at sites where radioactive materials have been used. The contractor shall comply with interim life safety plans, infection control measures, and egress requirements during construction; coordinate all utility shutdowns with the Contracting Officer's Representative (COR); and comply with all applicable federal, state, and local laws, regulations, standards, and codes. Work shall be coordinated with the COR to minimize impacts on daily operations at the VA Bedford Healthcare System. The award will be made as a firm-fixed-price purchase order. Offers are due by 3:00 PM EDT on May 11, 2026.
https://sam.gov/workspace/contract/opp/2e591e76874d4ec9b40bcffa1e461985/view

F -- EMERGENCY REMEDIAL RESPONSE SERVICES (ERRS VI) (SOL)

U.S. Environmental Protection Agency, Region 1 Contracting Office, Boston, MA
Contract Opportunities on SAM.gov 68HE0125R0004, 2026

This is a total small business set-aside under NAICS code 562910. EPA Region 1 seeks a contractor to support activities associated with emergency response, including sampling, monitoring, site stabilization, containment of spilled materials, waste treatment, restoration, removal actions, transportation, and disposal. Response activities include planning; containment and countermeasures during emergency and removal responses; decontamination and mitigation; treatment, transportation, and disposal operations; restoration; analytical services; demolition; construction and support facilities for removal actions; marine (water) operations; international (transboundary) response; and response times, Level A response capabilities, and integration into the Unified Command (Incident Command System). The contractor shall provide environmental response services for the removal and treatment of oil, petroleum products, hazardous substances, pollutants, and contaminants, as specified in task orders (TOs). The contractor shall also support response actions related to natural and manmade disasters, acts of terrorism, weapons of mass destruction, and chemical, biological, radiological, and nuclear incidents. The award will be an indefinite-delivery/indefinite-quantity contract with fixed rates for labor and equipment and cost-reimbursable elements for other direct costs. Task orders may be issued on a time-and-materials (T&M) or fixed-price basis. The period of performance is from November 30, 2026, through November 29, 2031. Offers are due by 2:00 PM EDT on July 27, 2026.
https://sam.gov/workspace/contract/opp/4d9d08a5e4ee473d8b320598529ac6d0/view

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Cleanup News

BUILDING 100 GROUNDWATER BIOREMEDIATION AT THE FORMER DOE PINELLAS PLANT, FLORIDA: REVIEW OF PROGRESS AND OPPORTUNITIES

Looney, B.B., H.H. VerMeulen, and E.D. Fabricatore. SRNL Report SRNL-STI-2025-00262, 58 pp, 2025

Operations at the former Pinellas Plant, particularly in the Building 100 area, resulted in the release of chlorinated organic solvents that contaminated subsurface soil and groundwater. DOE implemented bioremediation as the primary cleanup technology, targeting cVOCs through reductive dechlorination processes that sequentially transform trichloroethylene into daughter products such as dichloroethylene and vinyl chloride. Over more than two decades, monitoring data indicates substantial progress toward remedial goals, with parent cVOC concentrations now reduced to near or below target standards across most of the site. Remaining contamination is largely confined to a localized hot spot beneath Building 100, which continues to act as a source of mass flux sustaining a narrow plume core where daughter product concentrations exceed remedial thresholds. Bioremediation has been supported by multiple deployments using state-of-the-practice and state-of-the-art technology and design strategies, including vertical and horizontal wells for improved access and coverage, and biostimulation and bioaugmentation. To prepare for the next stages of the bioremediation and related decision-making, DOE developed several lines of inquiry, including evaluating whether remediation optimization is needed by assessing the necessity of additional electron donor or bioaugmentation, identifying improved performance metrics, exploring alternative technical and regulatory strategies, and considering future site changes that could impact the cVOC plume and bioremediation progress. The Building 100 area will transition from active bioremediation to an enhanced attenuation (EA) remedy. Recommendations include transition to an optimized EA strategy that relies on natural geochemical zoning without additional biostimulation or bioaugmentation, while incorporating targeted contingencies for hotspot treatment and mid-plume oxygen limitations, strengthening monitoring by aligning with EPA MNA multiple lines of evidence, regularly monitoring the subsurface microbiology in a few locations to provide data on the resilience of the EA bioremediation strategy, document the responsiveness of the microbial community to site conditions, and verify that the enzymes are present to address the specific needs over time.
https://www.osti.gov/servlets/purl/3023071

REMEDIAL ACTION CONSTRUCTION CASE STUDY-EXCAVATION/CONSOLIDATION AND ISS REMEDY, EPA REGION 6, MARION PRESSURE TREATING SUPERFUND SITE, RES CLIN2 CONTRACT TASK ORDER

Watters, C. | DCHWS West 2025 Winter Symposium, 26-28 January, Denver, CO, 16 slides, 2026

This presentation describes the implementation of remedial action (RA) activities at the Marion Pressure Treating Superfund site. A total of 7,000 CY of DNAPL (creosote) impacted soil was excavated and consolidated in an onsite waste repository. A combined remedial approach was implemented using the in situ soil stabilization (ISS) of ~29,186 CY of DNAPL-impacted soil by large diameter auguring methodology. The construction of a final landfill cap, including final site restoration for permanent erosion control and drainage improvements were also completed as part of the RA. The presentation focuses on the successful mitigation of RA construction challenges and change management approaches, including:

- Incomplete site investigation and characterization.
- Project delay from additional treatability study testing to evaluate an alternative cement mixture due to difficulties in obtaining Portland Type II cement.
- Control of rainwater and excavation flooding.
- Understanding and calculating swell quantities and percentages that change depending on soil conditions, which can affect the required footprint or elevations for containment/ landfill areas.
- ISS and clay placement work during the wet season created challenges. Import borrow sites may also be impacted by storms.
- Locating import materials that meet all the specifications (permeability for clay and plasticity index, organic content, and pH too low for topsoil) in a rural area may be difficult.

https://mediacdn.guidebook.com/upload/213718/pbHtLIF6AeXPWaq5qjkDRBuqTJu1n6XBwGBW.pdf

GROUNDWATER RESTORATION AND LONG-TERM STEWARDSHIP AT A FORMER SMELTER

Hay, M. | DCHWS West 2025 Winter Symposium, 26-28 January, Denver, CO, 15 slides, 2026

Remedial design and construction activities were completed for a former lead and copper smelter in El Paso, Texas. Groundwater across a portion of the site is impacted primarily with arsenic, with the highest concentrations and the majority of groundwater flow focused along former arroyos. These features represent the greatest contribution of contaminant mass flux toward offsite receptors and are the key to an integrated strategy for remedial design/remedial action. The optimized remedial approach involved a shift from concentration-based compliance to mitigating contaminant flux to protect downgradient receptors. A combination of source control measures and passive groundwater management and treatment approaches was selected to achieve remedial goals and balance the needs of future site development. The remedial approach involves source control, water management, and in situ groundwater treatment, including zero-valent iron (ZVI)-based permeable reactive barriers (PRBs). Site arroyos consist of coarse, highly permeable alluvial deposits, which result in a high groundwater flux system. These conditions required PRB designs with high permeability, sufficient groundwater residence time, and iron content consistent with contaminant loading rates and desired treatment longevity. In the largest arroyo, two ZVI PRBs were constructed in series to passively treat site groundwater and reduce contaminant mass flux. Results indicate that the zero-valent iron barriers have been highly effective for arsenic removal from groundwater, despite treatment challenges driven by groundwater alkalinity and dissolved calcium. The presentation reviews the pre-design testing, key design elements, and field-scale

performance of passive groundwater treatment through the reactive barriers. It also provides an overview of the overall remedial construction, including strategies for water management across the site. https://mediacdn.guidebook.com/upload/213718/ZlKj3UQYiVJJeiHQsL4a2B0aGSD3iH1ktQNv.pdf

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Demonstrations / Feasibility Studies

TREATABILITY STUDY TO EVALUATE BIOREMEDIATION OF TRICHLOROETHENE AT SITE K, FORMER TWIN CITIES ARMY AMMUNITION PLANT, ARDEN HILLS, MINNESOTA, 2020-22

USGS, Scientific Investigations Report 2025-5113, 104 pp, 2025

Lab and field treatability tests were completed to evaluate the potential application of anaerobic bioremediation for a shallow TCE-contaminated groundwater plume in a perched alluvial aquifer at Site K, former Twin Cities Army Ammunition Plant. The plume extends beneath Building 103, where soil excavations left some deeper contaminated soil in place within the TCE source area. The report describes the study, including the pre-design site characterization to assist in formulating the bioremediation approach, lab experiments to support the design of the pilot test, and implementation and one-year performance monitoring results. The pilot test utilized three separate test plots, each about 30-ft wide and 60-ft long: plots GS1 and GS2 in the source area of the plume and plot GS3 in the downgradient area of the plume near the excavation trench. Each test plot had one injection well, one monitoring well upgradient from the injection point, and 12 surrounding monitoring wells in a grid to capture variable groundwater flow directions. Performance monitoring included hydrologic measurements and analyses of cVOCs, redox-sensitive constituents, dissolved organic carbon, bromide, volatile fatty acids, compound-specific carbon isotopes, and microbial communities. Data collected during the tests showed that enhanced, complete reductive dechlorination of cVOCs in the groundwater was achieved in the GS1 and GS3 plots. In contrast, evidence of the distribution of the injected amendments and subsequent biodegradation was limited in GS2, which was in an area of more heterogeneous soil lithology and low water table elevations. The pilot tests showed that the relatively low hydraulic head gradients and temporal changes in groundwater flow directions in the shallow aquifer would add complexity to a full-scale bioremediation effort. The radius of influence (ROI) at GS1 and GS3 was close to the design ROI of 15 ft. The estimated ROI at GS2 was about four times the design ROI, but it may be less reliable at this location due to groundwater flow direction. In addition, the low temperatures following WBC-2 injection, combined with the low hydraulic head gradients, were probably major factors in the delay observed before the onset of enhanced biodegradation following injection of the culture. Additional test injections could be beneficial to optimize the timing of donor and culture injections with the variable temperatures and hydraulic head in the shallow aquifer.
https://pubs.usgs.gov/sir/2025/5113/sir20255113.pdf

LONG-TERM PERFORMANCE OF PASSIVE VOLATILE ORGANIC COMPOUNDS (VOCS) SAMPLERS FOR INDOOR AIR

Zimmerman, J., B. Schumacher, C. Lutes, B. Cosky, and H. Hayes.
Environments 12(8):267(2025)

The first phase of this study evaluated the performance of Radiello® charcoal-based, solvent-extracted passive samplers over exposure periods ranging from one week to one year in a test house with known vapor intrusion (VI). Chloroform %Bias values exceeded the ±30% acceptance criterion after four weeks of exposure. Benzene, hexane, and TCE concentrations were within the acceptance criterion for up to three months. Toluene and PCE demonstrated uniform uptake rates over one year. In the second phase of this study, testing of the longer exposure times of six months and one year was evaluated with three additional passive samplers: Waterloo Membrane Sampler™ (WMS™), SKC 575 with secondary diffusive cover, and Radiello 130 passive samplers with yellow diffusive bodies. The SKC 575 and Radiello 130 passive samplers produced acceptable results (%Bias ≤ 30%) over the six-month exposure period, while the WMS sampler results favored petroleum hydrocarbon more than chlorinated solvent uptake. After the one-year exposure period, the passive sampler performances were acceptable under specific conditions for this study. Results suggest that all three samplers can produce acceptable results over exposure time periods beyond 30 days and up to a year for some compounds. *This article is* ***Open Access*** *at* https://www.mdpi.com/2076-3298/12/8/267

BIOASH-BASED STABILIZATION/SOLIDIFICATION FOR HEAVY METAL(OID) SOIL REMEDIATION: A CASE STUDY IN NORTHERN SWEDEN

Khasevani, S.G., I. Carabante, J. Bjuhr, and L. Andreas.
Materials 19(4):790(2026)

A pilot study evaluated bioash-cement composite binder as a low-cement stabilization material for metal-contaminated soils, with an emphasis on mechanical performance and long-term leaching behavior under field conditions. Two fine soil fractions from the Nasudden area, classified as hazardous (HS) and non-hazardous (NHS), were treated in lab trials to optimize binder composition. An optimum formulation containing 35 wt.% bioash and 5 wt.% cement (dry basis, relative to soil) improved unconfined compressive strength (UCS) to 696 kPa (HS) and 479 kPa (NHS) after 28 days and reduced leaching of

Zn, Cd, Pb, and Co. Arsenic immobilization improved in HS but decreased in NHS, while Cu and Ni leaching increased, consistent with elevated pH and dissolved organic carbon promoting soluble complexation. The optimized binder was then applied to a third pilot soil and validated at pilot scale by treating 100 tonnes of soil and constructing a 2 m high noise barrier. Parallel lab tests on the pilot soil yielded UCS values of 1000 kPa and confirmed effective retention of Zn and Cd, with generally good Pb stabilization, whereas As remained the most mobile element across soil types. Two-year field monitoring showed decreasing leachate concentrations of As, Cu, Ni, Pb, and Zn over time, and field samples exhibited improved Cu and Ni retention compared with lab results, suggesting progressive aging effects such as carbonation and mineral transformations. Results demonstrate that bioash-cement binders can produce mechanically stable treated materials suitable for low-load applications while reducing cement demand; however, performance is strongly controlled by soil-specific chemistry (notably DOC) and field execution (mixing and compaction), and further binder optimization is required to address arsenic mobility. https://www.mdpi.com/1996-1944/19/4/790

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Research

INITIAL UNCERTAINTY ANALYSIS OF CARBON TETRACHLORIDE CONTAMINATION AND REMEDIATION IN THE RINGOLD A AND LOWER MUD UNITS AT THE CENTRAL PLATEAU

He, X., M. Rockhold, and X. Song. PNNL Report PNNL-38406, 16 pp, 2025

The long-term effectiveness of groundwater cleanup at the Hanford Site Central Plateau depends on predictive models that can capture key uncertainties in contaminant fate and transport. Carbon tetrachloride (CCl_4) presents challenges due to variability in degradation rates, uncertainty in initial plume distribution, and subsurface heterogeneity, which directly influence plume persistence, migration pathways, and remedy performance. A large-scale Monte Carlo analysis was conducted using the Plateau to River (P2R) model framework that parameterized degradation rate, initial plume distribution, and hydraulic conductivity. Degradation was represented as a first-order process, with half-lives ranging from 70 to 700 years. Initial plume distributions were created using a geostatistical simulation method (sgsim), which generates many equally plausible versions of how contaminants might be distributed underground. From this, 100 different scenarios were mapped onto the P2R grid. Variability in hydraulic conductivity was represented similarly, with 100 scenarios each for the Ringold Lower Mud and Ringold A units (layers 6 and 7), based on fitted exponential variograms and conditioned to well data. In total, more than 1,000 realizations were simulated to assess plume behavior under uncertainty. The analysis highlights that uncertainty in degradation rate and initial plume configuration are the primary drivers of variability in plume predictions, while conductivity heterogeneity plays a limited role. Findings underscore the need for improved site-specific data on degradation processes and source characterization to enhance the reliability of long-term performance assessments and to better inform remedial decision-making. https://www.osti.gov/servlets/purl/3000283

SUSTAINABILITY ASSESSMENT OF ALTERNATIVE METHODS FOR DESTRUCTION OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) IN WATER

Mohamed, M.S. and K.R. Reddy. | Remediation 36(2):e70054(2026)

Research aimed to evaluate the sustainability of three methods for destroying PFAS: incineration, electrochemical oxidation (EO), and ultraviolet advanced oxidation processes (UVAOP). The triple bottom line sustainability framework was used to evaluate the environmental, economic, and social aspects of the destruction methods. Environmental consequences were evaluated through a life cycle assessment implemented in SimaPro. Economic sustainability was assessed by analyzing direct and indirect costs. Social implications were evaluated using the Social Sustainability Evaluation Matrix. Furthermore, the Integrated Value Model for Sustainability Assessment was used to integrate the results of environmental, economic, and social sustainability assessments. Results show that EO is the most sustainable method with a sustainability index (SI) of 0.90, followed by UVAOP (SI = 0.48), whereas incineration is the least sustainable (SI = 0.29), under balanced weighting criteria.
https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70054

MEASURING FLUOROTELOMER ALCOHOLS BY THERMAL DESORPTION-GAS CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY: INTERLABORATORY STUDY RESULTS

Eichler, C., H. Calder, B. Chandramouli, M. Curtis, H. Hayes, B. Kim, R. Marfil-Vega, C. Mejías, L. Miles, A. Owens, J. Stuff, K. Thaxton, J. Vandenberg, N. Watson, D. Wevill, J. Whitecavage, and X. Liu. | Journal of Chromatography A 1769:466725(2026)

An international interlaboratory study (ILS) was conducted with nine labs to evaluate the precision of ASTM International Standard Test Method D8591 to measure fluorotelomer alcohols (FTOHs). The test method specifies the analysis of four FTOHs (4:2, 6:2, 8:2, and 10:2 FTOH) collected on PFAS-specific thermal desorption tubes by gas chromatography coupled with tandem mass spectrometry. During the ILS, participating labs were instructed to use the test method to analyze three samples (A, B, and C) three times. Each sample contained the target FTOHs at defined concentrations unknown to the labs. The results from seven laboratories show that the relative reproducibility standard deviation (RSD_R) of the

method ranges from 14% to 26%, and the relative repeatability standard deviation (*RSD_r*) ranges from 4.6% to 11%, with RSDs decreasing with decreasing volatility of the FTOHs. Bias ranged from -13% to 6.0% and was generally larger and negative for less volatile FTOHs. The test method, in conjunction with the precision statistics from this ILS, will provide a reliable, defendable method that can be used in the context of studying PFAS sources, transport, and human exposure.

HUMAN IN VITRO METABOLISM OF AN ENVIRONMENTAL MIXTURE OF POLYCYCLIC AROMATIC HYDROCARBONS (PAH) FOUND AT THE PORTLAND HARBOR SUPERFUND SITE

Gaither, K.A., K. Tyrrell, W. Garcia, K.A. Anderson, and J.N. Smith.
Toxicology Letters 412:172-181(2025)

A study aimed to measure human metabolism rates of Supermix-10, the ten most abundant PAHs found at the Portland Harbor Superfund site, to support the development of human pharmacokinetic models. Individual PAHs were incubated from Supermix-10 in pooled human liver microsomes and quantified parent PAH disappearance using high-performance liquid chromatography with UV and fluorescent detection. To assess the potential of mixture interactions, the metabolism of all 10 compounds was measured in an equimolar mixture, and the rates of parent disappearance were compared to those observed for individual PAHs. All Supermix-10 PAHs demonstrated rapid parent compound disappearance in human hepatic microsomes. PAHs are grouped into high metabolism rates and capacity (2-methylnaphthalene, acenaphthylene, fluorene, naphthalene), high-affinity metabolism that rapidly achieves low-level saturation (benzo[a]anthracene, chrysene), and moderate metabolism rates and capacity (fluoranthene, pyrene, retene, phenanthrene). Smaller PAHs exhibited faster metabolism, and higher metabolism rates correlated inversely with molecular weight. When incubated in an equimolar mixture, Supermix-10 demonstrated significantly slower metabolism (47-89 %) compared to the metabolism of individual PAHs at the same concentration. Findings enhance understanding of PAH metabolism in humans and demonstrate significant mixture interactions under the conditions tested. They also offer insights into the metabolic behavior of Supermix-10 and provide critical metabolism rate data to support the development of physiological based pharmacokinetic models.

ACID TAR LAGOON REMEDIATION I: BASELINE GEO-ENVIRONMENTAL CHARACTERIZATION AND PRELIMINARY STABILIZATION/SOLIDIFICATION MIX DESIGNS

Grubb, D.G., D.R.V. Berggren, and E.K. Helbling. Remediation 36(2):e70061(2026)

A treatability study is presented that describes the baseline geo-environmental characterization and pH buffering of soil surrogates containing 20% (S2X) or 40% (S4X) acid tar by volume (where X denotes testing phase) and various stabilization/solidification (S/S) mix designs using powdered ladle slag (PLS), a 60/40 (w/w) blend of Type IL Portland Cement (PC) and Grade 120 NewCem (NC) slag cement, and bentonite (B) for some mixes. The soil surrogates reflected the expected in situ S/S (ISS) profile comprising an ISS rig working platform, residual tar, bottom lagoon liner materials, and shallow subsurface soils after the bulk tars are excavated for incineration. The total benzene content of the S41, S42, and S22 soil surrogates averaged 16,300, 24,000, and 10,568 mg/kg, respectively, with corresponding sulfur contents of 28,350, 93,500, and 43,500 mg/kg and pH values typically less than 0.5. EPA 1313 testing on the S41/S42 soil surrogates tracked the leaching of EPA target analyte list metals over a range of pH and also indicated that it took about three equivalents of base addition to maintain pH conditions above 8 to ensure the long-term stability of the ISS mixes. EPA 1316 M leaching of VOCs indicated that the S41, S42, and S22 media were characterized by benzene effective concentrations of 497, 406, and 318 mg/L, respectively. The S41 and S42 surrogates were extremely challenging to solidify, requiring 5 wt% PLS + 35 wt% PC/NC to exceed the relatively modest unconfined compressive strength (UCS) target of 276 kPa (40 psi). Regardless of UCS, most ISS mixes met the permeability criterion of less than 1×10^{-6} cm/s. The minimum ISS reagent dose satisfying the UCS, K, and residual pH buffer capacity (3 meq/g) targets for 28-day cured mix designs for the S22 soil surrogate was 5 wt% PLS + 30 wt% PC/NC + 0.5 wt% B. This was the minimum reagent dose proposed for long-term leaching and field pilot testing.

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General News

WEB-BASED TOOLS FOR DATA-INFORMED REMEDY OPTIMIZATION: SOFTWARE THEORY AND USER GUIDE

Song, X., F. Lopez Jr., M. Corney, P. Tran, Y.S. Afzal, T.E. Joppich, S.N. Baur, H. Luu, R. Osman, C.D. Johnson, and I. Demirkanli. PNNL Report PNNL-38413; DVZ-RPT-121, 50 pp, 2025

This report documents the development and application of two web-based decision-support tools for PTOLEMY (Pump-and-Treat Optimized Location Evaluation to Maximize Yields) and OPTIMA (Optimization for Pump-and-Treat Implementation, Management, & Assessment). These tools enhance remedy design and management by leveraging advanced computational methods (deep learning and multi-objective optimization) within a user-friendly platform. By integrating data-driven models with established hydrogeological knowledge, PTOLEMY and OPTIMA enable more efficient evaluation of well placement and operational strategies, helping site managers balance multiple remediation objectives under complex conditions. Both tools are implemented as modules within the Suite Of Comprehensive Rapid Analysis Tools for Environmental Sites (SOCRATES) web platform, which provides data access, visualization, and analytics to support remedy optimization across sites. Both PTOLEMY and OPTIMA are intended as decision support tools to guide and streamline P&T design processes, not as replacements for site-specific modeling or regulatory decision-making requirements. They provide preliminary analyses that must ultimately be confirmed with high-fidelity models and engineering review. The tools are designed for transparency and traceability; they draw from established data sources and allow users to export maps, data tables, and configurations for documentation. By accelerating the exploration of "what-if" scenarios and narrowing down options, PTOLEMY and OPTIMA support more informed, timely, and cost-effective decision-making in P&T remedy management. https://www.osti.gov/servlets/purl/3001001

A RECENT OVERVIEW OF PHOTO ELECTRO CATALYTIC MATERIALS MECHANISTIC INSIGHTS TOWARDS PFASS DEGRADATION: BY-PRODUCTS DETERMINATION AND AI/ML IMPLICATIONS

Penke, Y.K., P. Chamoli, and H.-M. Lo. Chemosphere 397:144852(2026)

This review examines the electrochemical and photocatalytic activities of various materials/composites that degrade PFAS. Technical observations are primarily referenced from recent literature published between 2020 and 2025. Iron and titanium species have shown better remediation abilities, which was reported in the majority of publications. Iron systems have shown better parameters for electrochemical activities (electrooxidation/reduction), whereas titanium suboxides and bismuth sheets are better related to the photoelectrochemical activity. Other 3D metal systems like Co, Ni, and boron-doped diamond, carbon structures (activated carbon, carbon sphere, and aerogel) are also detailed with PFOA and PFOS treatment. In understanding the degradation mechanism, the radical species activity has densely dominated the process with the support of radical oxygen/sulphur species and charge transfers. Radical species activity, dissolved oxygen influence, and direct electron transfer mechanism are provided to understand the heterogeneous catalytic reactions and redox materials chemistry. Decarboxylation and hydro-defluorination mechanisms are explained with a set of findings based on the catalyst and compound chain length. Determination of degradation byproducts and intermediates utilizing different state-of-the-art spectroscopy tools is detailed to support the issue related to the secondary contamination in various remediation sites and the necessary field studies findings. Implications of AI/ML towards efficient handling of the various PFAS treatment and management technologies are discussed briefly.

CURRENT KNOWLEDGE ON PHYTOREMEDIATION POTENTIAL OF INDUSTRIAL HEMP (CANNABIS SATIVA L.) FOR PFAS AND HEAVY METAL CONTAMINATED SOILS

Ansari, O. and L. De Prato. | Remediation 36(2):e70059(2026)

This review compiles current research on the phytoremediation potential of industrial hemp (Cannabis sativa L.) for heavy metals, including arsenic, aluminum, mercury, copper, lead, cadmium, nickel, and zinc, as well as PFAS. Interdisciplinary studies were conducted across greenhouse, field, hydroponic, and amendment-based experiments. Findings indicate that hemp exhibits strong tolerance and accumulation capacity for cadmium, lead, and arsenic, with metal uptake primarily concentrated in roots. Cultivar differences significantly influence both uptake efficiency and biomass yield. PFAS uptake is selective, with higher bioconcentration observed for short-chain and carboxylic acid compounds, although overall soil PFAS removal remains low to moderate. Remediation efficacy is modulated by soil properties, biosolid amendments, and microbial symbioses, which enhance PFAS bioavailability and plant tolerance. Comparative assessments reported in the literature suggest that hemp's rapid biomass production and adaptability may offer advantages over other phytoremediation species. However, limitations in PFAS degradation and ecological risks, such as PFAS accumulation in pollen, persist. Integration of soil amendments and microbial inoculants shows potential to enhance hemp growth rates and PFAS tolerance; however, further testing and field validation are required. The review underscores hemp's potential as a sustainable phytoremediation agent and a component of integrated PFAS remediation strategies, while highlighting the need for standardized protocols and risk assessments to ensure environmental safety and practical scalability. https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70059

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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