Entries for December 16-31, 2024

Market/Commercialization Information

Z -- IRON KING MINE-HUMBOLDT SMELTER (IKM-HS) REMEDIAL DESIGN (RD) (SRCSGT)

U.S. Army Corps of Engineers, South Pacific Division, Los Angeles District, Los Angeles, CA
Contract Opportunities on SAM.gov W912PL25S0007, 2025

This is a sources sought notice for marketing research purposes only under NAICS code 541330. The U.S. Army Corps of Engineers (USACE) Los Angeles District seeks responses from both large and small remedial design firm(s) that are qualified to develop the Remedial Design (RD) for the Iron King Mine-Humboldt Smelter Superfund Site. The award will be an Indefinite Delivery Indefinite Quantity (IDIQ) Single Award or Multiple Award Task Order Contract with a value of up to $49,000,000. The contract(s) are anticipated to be awarded in the 2nd quarter of Fiscal Year 2026 with a five-year base period. The ROD selected remedy is Alternative 3B: On-Site Consolidation/Containment at Two Repositories with Waste Remaining East and West of the Highway. The highway is State Route 69, which serves as the main road to Prescott, Arizona, from Arizona Interstate 17. The Engineering Services contractor will determine what studies are necessary to implement Alternative 3B and design Alternative 3B. Respondents must refer to the ROD and Alternative 3B for context, which calls for removing mine and smelter wastes and contaminated soils and moving them to two waste repositories. Mine wastes and contaminated soils from the former mine and surrounding areas west of Highway 69 would be moved into a repository on the existing mine tailings pile west of the highway. Mine wastes at the former smelter and in the Chaparral Gulch east of Highway 69 would be moved into a second waste repository east of the highway. Also, the Lower Chaparral Gulch Dam east of the highway shall be removed to allow access to waste in the Lower Chaparral Gulch and restore the natural hydraulics and vegetation of the drainage, including watershed and habitat restoration. Capability statements are due by 2:00 PM PST on February 11, 2025.
https://sam.gov/opp/64f15259d49f4c8ea3e603c04afe09ab/view

B -- USFWS - KOFA NATIONAL WILDLIFE REFUGE, YUMA, AZ (SRCSGT)

U.S. Department of the Interior, Fish and Wildlife Service, Falls Church, VA
Contract Opportunities on SAM.gov 140F1B25R0003, 2025

This is a sources sought notice for marketing research purposes only under NAICS code 541620. The U.S. Fish and Wildlife Service seeks responses from qualified firms that are interested in developing a complete Removal Action design that will address releases of hazardous substances to the environment at five abandoned mine sites at the Kofa National Wildlife Refuge in Yuma, Arizona. The FWS completed a Preliminary Assessment/Site Inspection at the Kofa NWR in August 2023 and initiated an Engineering Evaluation/Cost Analysis (EE/CA) in September 2024 to evaluate the presence and potential risk associated with former mining activities and to identify and evaluate potential response actions appropriate to the site. In addition, FWS completed a "Removal Options Interim Cost Estimate Report" in December 2024, to flesh out potential alternatives and costs as a precursor to the EE/CA. Based on sampling results from the EE/CA, elevated concentrations of metals in soil, particularly mercury and lead, are present at the following five sites included in the EE/CA: Buckeye Load, Rob Roy, Sheep Tank, Big Eye, and Copper Cup. Based on estimates of mining waste present Refuge-wide and estimated remediation costs, a phased approach will be necessary to address releases of hazardous substances to the environment at the Kofa NWR. Alternatives reviewed in the Removal Options Interim Cost Estimate Report range from a no-action alternative to consolidation in an on-site repository, with estimated costs ranging from $0 to $28,600,000. Under this SOW, the contractor will develop a Refuge-wide phased plan for implementing the recommended alternative in the EE/CA, and an engineering design to address the releases of hazardous substances at the five abandoned mine sites based on results of the PA/SI, the Removal Options Interim Cost Estimate Report, and the EE/CA. Responses are due by 4:00 PM EST on February 12, 2025. https://sam.gov/opp/0e150fb9f8f94c9eabd8adf6d226e295/view

F -- NATIONWIDE HEAVY METALS REMEDIATION SERVICES IN SUPPORT OF ARMY RESERVE INSTALLATION MANAGEMENT DIRECTORATE (COMBINE)

U.S. Army Corps of Engineers, Louisville District, Louisville, KY
Contract Opportunities on SAM.gov W912QR25R0008, 2025

This is a full and open competition. The U.S. Army Corps of Engineers, Louisville District, seeks contractors to provide Heavy Metal sampling, mitigation, and remediation services across 670 locations and facilities designated by the Army Reserve Installation Management Directorate in the Continental United States, Alaska, American Samoa, Northern Mariana Islands, Guam, Hawaii, Puerto Rico, and the U.S. Virgin Islands. These facilities consist of former Indoor Firing Ranges that were repurposed to administrative facilities for personnel; contaminated occupied facilities that are open to the public; legacy contaminated facilities closed to the public; legacy contaminated unoccupied facilities; and heavy metals generating facilities. Heavy Metal Remediation services include the sampling and abatement of heavy metal contamination in addition to ancillary environmental services including, but not limited to, remediation, start-up activities, environmental compliance, and environmental analysis. Heavy Metal Remediation services include the sampling and abatement of heavy metal contamination in addition to ancillary environmental services including, but not limited to, remediation, start-up activities, environmental compliance, and environmental analysis. The award will be an Indefinite Delivery, Indefinite Quantity Multiple Award Task Order Contract with a target of five awardees and a total shared capacity not to exceed $245M. The basis of awards will be made using the best value tradeoff process. Offers are due by 2:00 PM EST on February 18, 2025. https://sam.gov/opp/254de6f366924fc98d384be6cd142638/view

Return to top

Cleanup News

CHARACTERIZATION OF A CONTAMINATED SITE USING HYDRO-GEOPHYSICAL METHODS: FROM LARGE-SCALE ERT SURFACE INVESTIGATIONS TO DETAILED ERT AND GPR CROSS-HOLE MONITORING

Pavoni, M., J. Boaga, L. Peruzzo, I. Barone, B. Mary, and G. Cassiani.
Water 16(9):1280(2024)

An advanced geophysical characterization of a contaminated site was conducted where an understanding of the dynamics in the unsaturated zone was fundamental in evaluating the effective management of the remediation strategies. Large-scale surface electrical resistivity tomography (ERT) was used to perform a preliminary assessment of the structure in a thick unsaturated zone and to detect the presence of a thin layer of clay supporting an overlying thin perched aquifer. Discontinuities in the clay layer have an enormous impact on the infiltration processes of both water and solutes, including contaminants. In this case, the technical strategy was to interrupt the continuity of the clay layer upstream of the investigated site to prevent most of the subsurface water flow from reaching the contaminated area. A deep trench was dug upstream of the site, and a forced infiltration experiment was carried out and monitored using ERT and ground-penetrating radar (GPR) measurements in a cross-hole time-lapse configuration to evaluate the effectiveness of the approach in facilitating water infiltration into the underlying aquifer. Results are presented with a particular emphasis on the contribution of hydro-geophysical methods to the general understanding of the subsurface water dynamics at this complex site. *This article is* ***Open Access*** *at* https://www.mdpi.com/2073-4441/16/9/1280?utm_campaign=releaseissue_waterutm_medium=emailutm_source=releaseissueutm_term=doilink12

FRACTURED ROCK TREATMENT OF IGNEOUS AND METAMORPHIC BEDROCKS USING THERMAL CONDUCTIVE HEATING

Eriksen, S. Nordrocs 9th Joint Nordic Meeting on Remediation of Contaminated Sites, 9-12 September, Uppsala, Sweden, 33 slides, 2024

In Situ Thermal Remediation (ISTR) using Thermal Conduction Heating (TCH) was successfully used to treat contaminants at three sites in Sweden. At the first site in Kvarnholmen, former storage tanks leaked PCE into fractures in the granite and, in the process, contaminated a 13,300 ft^2 area, with a total volume of 38,700 cy to a depth of >98 ft (33 ft below sea level). TCH was used to uniformly heat the granite, and >1,000 lbs of CVOCs were removed utilizing a wellfield with 105 heaters. Treatment at the Trollhatten site included excavating the sediment and thermal treatment of the bedrock with TCH. Heat was delivered via 60 heater wells reaching 21.5 meters in bedrock. Extraction was conducted via 14 shallow vacuum wells installed in an artificial extraction layer on the bedrock surface post-excavation. Additional wells installed, included nine temperature monitoring wells measuring at every meter, 15 groundwater sampling wells with slots at 6, 11, and 20 m, and a ~8-m deep well equipped with a pump to drawdown the water table. The third site, a former textile and subsequent metalware factory in Varberg was contaminated with chlorinated solvents in deep bedrock, which had spread to 164 ft bgs in a fractured granite. The cleanup aimed to remove source area contamination (an 8,600 ft area) and avoid potential vapor intrusion and indoor air issues. A total of 76 heat wells were installed to 170 ft bgs. A permeable layer of washed gravel was constructed at the surface to create a permeable zone to capture and extract steam, air, and COCs during thermal remediation. To avoid condensation of the CVOCs in shallow soils and vapor extraction plenum and to ensure pneumatic control, an insulating lightweight concrete layer was constructed over the top of the treatment zone. After 6 months of heating, the remedy met the cleanup goal (5 mg/L), removing ~6,614 lbs of chlorinated solvents. One year after thermal operations were shut down, groundwater samples collected in the former source zone showed average concentrations of targeted CVOCs of 1.2 mg/L; no rebound was observed. The bedrock source zone was removed, and monitoring results showed that the groundwater plume had decreased in size.
https://nordrocs.org/wp-content/uploads/nordrocs2024/M3_Eriksen.pdf

BIOGEOCHEMICALLY-ENHANCED TREATMENT OF CHLORINATED ORGANICS AND METALS

Molin, J. I Nordrocs 9th Joint Nordic Meeting on Remediation of Contaminated Sites, 9-12 September, Uppsala, Sweden, 25 slides, 2024

Biogeochemical reduction (BGCR), which combines biological and chemical processes, has recently been applied to treat CVOCs at sites in CA and arsenic in FL. Bench tests and full-scale treatment were conducted at multiple sites affected by CVOCs and metals to evaluate the effectiveness of a BGCR-enhancing reagent (Geoform® Extended Release [Geoform ER]) for in situ remediation of CVOCs and metals. Groundwater was affected by very high concentrations of chlorinated ethenes at two sites in CA. Groundwater at a separate site was affected by mixed chlorinated ethenes, ethanes, and methanes. Bench tests and full-scale treatment were conducted to sequester elevated concentrations of arsenic in groundwater at a site in FL. At each site, full-scale treatment was conducted by distributing Geoform® ER into the affected aquifer by high-pressure injection. Groundwater monitoring was conducted to confirm and quantify treatment. The bench tests at the California sites demonstrated that BGCR significantly increased the reactivity of the ZVI-containing ISCR reagents to treat CVOCs. Field tests demonstrated that applying Geoform™ ER established highly reducing conditions and enhanced the biological reduction of the supplied sulfate to sulfide. Simultaneously, the CVOCs in the mixed CVOC plume were rapidly degraded by both biotic and abiotic processes to below regulatory goals, resulting in a no further action determination within 30 months of the start of treatment. Bench tests for the Florida site demonstrated that arsenic was rapidly removed from solution using Geoform™ ER, and a clear dose response for treatment was observed. A description of the BGCR processes applied, the methods, results of the bench tests, full-scale application of biogeochemical reduction for treating CVOCs at the CA sites, and sequestering arsenic at the FL site were presented.
https://nordrocs.org/wp-content/uploads/nordrocs2024/M4_Molin.pdf

Return to top

Demonstrations / Feasibility Studies

ENHANCING BIOREMEDIATION OF DIESEL/BIODIESEL BLEND (B20) IMPACTED SITES USING IN SITU BIOREACTORS: A NATURE-BASED SOLUTION FOR SUSTAINABLE GROUNDWATER MANAGEMENT

Schneider, M.R., A.C.C. Bortolassi, A.U. Soriano, M.P.M. Baessa, L.F. Martins, R. de Almeida Heringer, and A.J. Giachini. I Groundwater for Sustainable Development 28:101387(2024)

Two experimental areas contaminated with B20 (80% diesel and 20% biodiesel v/v) were monitored for 10 and 12 years, respectively, to evaluate ammonium acetate biostimulation (B20_BAA) and natural source zone depletion (B20_NSZD) as remediation strategies. Although the benzene half-life was 1.49 and 4.08 years, respectively, hydrocarbon concentrations remained above the MCL in Brazil for groundwater. Two pilot-scale airlift bioreactors were employed as nature-based solutions (NbS) to reduce the contaminant concentrations for site closure. Benzene and 2-methylnaphthalene concentrations decreased significantly after the bioreactors began operation, reaching values below their respective MCL. 16S rRNA gene sequencing showed a beneficial response of microbial communities composed of *Massilia*, *Burkholderia-Caballeronia-Paraburkholderia*, *Mycobacterium*, and *Bacillus* genus involved in hydrocarbons aerobic biodegradation. Predicted functional genes analysis demonstrated that the relative abundances of key aerobic degradation pathways for benzene and 2-methylnaphthalene increased, supporting the hypothesis that the NbS stimulated hydrocarbon biodegradation. Findings demonstrate that combining different NbS can effectively remediate petroleum hydrocarbons in contaminated groundwater through geochemical characteristics and exploration of indigenous microorganisms.

DEGRADATION OF POLY- AND PERFLUOROALKYL SUBSTANCES (PFAS) IN WATER VIA HIGH POWER, ENERGY-EFFICIENT ELECTRON BEAM ACCELERATOR

Lange, Cleston and C. Cooper. Report No. DOE-3M-9132, 109 pp, 2024

A two-year project aimed to determine if an electron beam (EB) could be used to break down a subset of PFAS in an energy-efficient and economical manner when compared to conventional water treatment technologies. Year 1 (Y1) work focused on sample EB treatment work in the Fermi National Accelerator Laboratory's (FNALs) Accelerator Applications Demonstration and Development (A2D2) EB accelerator. Most of the work examined PFOS and PFOA. The work from Y1 provided information about the optimal operating parameters and additives to use when treating PFOS and PFOA via EB. The data were then used to see where an EB accelerator would be best suited to treat PFAS in a water treatment system. Granular activated carbon was then compared to e-beam treatment technology with respect to energy and treatment costs. In year 2 (Y2), several conventional ebeam accelerator designs and FNAL's developmental compact SRF accelerator design were evaluated for their suitability in PFAS treatment from an energy efficiency and cost standpoint. Several EB parameters were evaluated and optimized for removing PFOA and PFOS from water at normal pressure and temperature, measured as total PFAS removal. Under optimized test conditions, both PFOA showed complete destruction to inorganic fluoride and

PFOS to inorganic fluoride and sulfate with mass balance. The effect on PFAS removal was evaluated relative to solution pH, total EB dose, EB dose rate, dissolved oxygen concentration, temperature, and initial PFAS concentration. Based on accelerator operating conditions, five different EB accelerator systems were compared: a continuous-wave, linear superconducting accelerator being designed at Fermilab; IMPELA at 5% and 25% duty factor, and the ILU-14 were normal conducting pulsed linear accelerators; and an IBA Rhodotron, which is a normal conducting, circular, continuous-wave accelerator. The report defines a set of optimal EB parameters to treat PFOA and PFOS at concentrations of 20 mg/L in water with destruction efficiencies near 100%. https://www.osti.gov/servlets/purl/2349585

MICROBIAL FUEL CELLS TO MONITOR NATURAL ATTENUATION AROUND GROUNDWATER PLUMES

Kirmizakis, P., M. Cunningham, D. Kumaresan, and R. Doherty.
Environmental Science and Pollution Research [published online 4 January 2025 before print]

A straightforward and economically efficient design for a microbial fuel cell (MFC) that can be conveniently integrated into a borehole to monitor natural attenuation in groundwater is presented. The design employs conventional, transparent, and reusable PVC bailers with graphite tape and granular activated carbon to create high surface area electrodes. The electrodes are connected across redox environments in nested boreholes through a wire and variable resistor setup. The amended electrodes were installed in pre-existing boreholes surrounding a groundwater plume near a former gasworks facility. Among locations tested, the MFC at the plume fringe exhibited the highest electrical response and displayed significant variations in the differential abundance of key bacterial and archaeal taxa between the anode and cathode electrodes. The other MFC configurations in the plume center and uncontaminated groundwater showed little to no electrical response, suggesting minimal microbial activity. This approach enables informed decision-making regarding effectively monitoring, enhancing, or designing degradation strategies for groundwater plumes. It offers a valuable tool for understanding and managing contaminant degradation in such environments. *This article is* ***Open Access*** *at*https://link.springer.com/article/10.1007/s11356-024-35848-5

Return to top

Research

RESEARCH BRIEF 361: MODEL PREDICTS PFAS BUILDUP IN WILD ANIMALS

National Institute of Environmental Health Sciences, Superfund Research Program, January 2025

SRP-funded researchers developed a model that predicts how PFAS move and build up within food webs. The model lays the groundwork for screening the thousands of PFAS compounds that could potentially pose a risk to ecological or human health. The model also considers features of different animals, such as their size, feeding rate, metabolism, and excretion, and the complex interactions between animals that make up different food webs. To validate their approach, the team tested their model's predictions in three different food webs against data from lab studies and samples collected from plants and animals in the wild. Their predictions of PFAS accumulation closely mirrored lab studies with rainbow trout and field data from the Lake Ontario ecosystem and the entire Canadian Arctic region. The new model predicted that PFOS and longer-chain PFAS compounds would tend to biomagnify in food chains, meaning that the concentrations of these compounds tend to increase from prey to predators. Other PFAS compounds, like GenX and PFHxS, were predicted to have low biomagnification potential in all three food webs. Similar to reported field data, the model predicted that land animals would accumulate more PFAS than aquatic ones.
https://tools.niehs.nih.gov/srp/researchbriefs/view.cfm?Brief_ID=361&utm_medium=email&utm_source=govdelivery

ASSESSING POTENTIAL BIAS IN PFAS CONCENTRATIONS IN GROUNDWATER AND SURFACE WATER SAMPLES

Wanzek, T., H. McIntyre, E. Hawley, R. Deeb, D. Bogdan, C. Shaefer, B. DiGuiseppi, A. Struse, T. Schwichtenberg, and J. Field.
Groundwater Monitoring & Remediation 44(3):28-37(2024)

Due to the widespread use of PFAS and low health-based thresholds, a literature review and laboratory and field studies were conducted to assess several potential sources of bias in PFAS concentrations. Lab results confirmed the presence of PFAS in multiple commonly used equipment, products, and materials in field sampling, potentially leading to false positive results. Best practices can be used to limit pathways for cross-contamination. Lab-specified hold times and sample storage temperatures are scientifically founded and adequately prevent bias due to PFAS sorption to sampling containers or partial degradation of some PFAS to form others. PFAS are also known to accumulate at the air-water interface and other interfaces. Results from lab and field studies indicate that PFAS enrichment in foam and the surface microlayer does occur. However, the effect is within the range of analytical and spatial sampling variability. Therefore, a change in sampling procedures is not needed. Findings were distilled into science-based and practical recommendations to minimize bias during PFAS sampling without incurring unnecessary cost and effort.

ARE CONTAMINATED SOIL AND GROUNDWATER REMEDIATION WITH NANOSCALE ZERO-VALENT IRON SUSTAINABLE? AN ANALYSIS OF CASE STUDIES

Visentin, C., A.B. Braun, C. Reginatto, I. Cecchin, G.V. Vanzetto, and A. Thome.
Environmental Pollution 352:124167(2024)

A study assessed the sustainability of using nZVI to nanoremediate contaminated sites and identified factors that affect its sustainability. Life cycle analysis tools evaluated environmental, economic, social impacts and sustainability for five pilot-scale nZVI studies. The functional unit of the life cycle analyses was 1.00 m^3 of remediated soil and groundwater. A Brazil case study was the least sustainable, while a U.S. case study was the most sustainable; modifying the functional unit resulted in variations in the sustainability index. Different factors influence nZVI sustainability in remediation, mainly the amount of nZVI used in the processes. By analyzing case studies, it is possible to determine the main factors influencing the sustainability of the nZVI remediation life cycle.

OCCURRENCE AND FATE OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) IN ATMOSPHERE: SIZE-DEPENDENT GAS-PARTICLE PARTITIONING, PRECIPITATION SCAVENGING, AND AMPLIFICATION

Li, X., Y. Wang, J. Cui, Y. Shi, and Y. Cai.
Environmental Science & Technology 58(21):9283-9291(2024)

A study collected size-fractionated particles, gas, and rainwater samples in Shijiazhuang, China, to investigate multiphase PFAS distribution in the atmosphere. Perfluoroalkyl carboxylic acids (PFCAs) dominated the total PFAS concentration in atmospheric media. A strong positive relationship ($0.79 < R^2 < 0.99$) was observed between the concentration of PFCAs and organic matter fraction (f_{OM}) in different particle size fractions but not for perfluoroalkyl sulfonic acids (PFSAs) and f_{OM}, suggesting f_{OM} may be an important factor influencing the size-dependent distribution of PFCAs. Temperature played a key role in the gas-particle PFAS partitioning but did not significantly affect their particle-size-dependent distribution. The associative concentration fluctuation of particle and particle-bound PFAS during precipitation suggested that precipitation scavenging was an important mechanism for removing PFAS from the atmosphere. Temporary increases in atmospheric PFAS concentrations were observed during the precipitation. Fugacity ratios of PFAS in rainwater and gas phase (log f_R/f_G ranged between 2.0 and 6.6) indicated a strong trend for PFAS to diffuse from rainwater to the gas phase during the precipitation, which may explain that the PFAS concentration in the gas phase continued to increase even at the end of the precipitation.

POTENTIAL HAZARDS OF POLYCYCLIC AROMATIC HYDROCARBONS IN GREAT LAKES TRIBUTARIES USING WATER COLUMN AND POREWATER PASSIVE SAMPLERS AND SEDIMENT EQUILIBRIUM PARTITIONING

Baldwin, A.K., S.R. Corsi, D.A. Alvarez, D.L. Villeneuve, G.T. Ankley, B.R. Blackwell, M.A. Mills, P.L. Lenaker, and M.A. Nott.
Environmental Toxicology and Chemistry 43(7):1509-1523(2024)

Polyethylene passive sampling devices (PEDs) were used to measure freely dissolved porewater and water column PAH concentrations at 55 Great Lakes tributary locations. The potential for PAH-related biological effects using PED concentrations was estimated by applying equilibrium partitioning (EqP), water quality guidelines, and pathway-based biological activity based on in vitro bioassay results from ToxCast. Results based on the estimates were compared with EqP-derived exposure estimates for concurrently collected sediment samples. Results indicate a potential overestimation of bioavailable PAH concentrations by up to 960-fold using the EqP-based method compared with measurements using PEDs. Even so, PED-based exposure estimates indicate a high potential for PAH-related biological effects at 14 locations. Findings provide an updated, weight-of-evidence-based site prioritization to help guide possible future monitoring and mitigation efforts. https://setac.onlinelibrary.wiley.com/doi/epdf/10.1002/etc.5896

TIRE-DERIVED CONTAMINANTS 6PPD AND 6PPD-Q: ANALYSIS, SAMPLE HANDLING, AND RECONNAISSANCE OF UNITED STATES STREAM EXPOSURES

Lane, R.F., K.L. Smalling, P.M. Bradley, J.B. Greer, S.E. Gordon, J.D. Hansen, D.W. Kolpin, A.R. Spanjer, and J.R. Masoner. l Chemosphere 363:142830(2024)

A reconnaissance of 6PPD and 6PPD-quinone (6PPD-Q) was conducted in surface waters across the U.S. from sites (N = 94) with varying land use (urban, agricultural, and forested) and streamflow to better understand stream exposures. A rapid, low-volume, direct-inject LC-MS method was developed to quantify 6PPD-Q and screen for 6PPD. Lab holding times, bottle material, headspace, and filter materials were investigated to inform best practices for 6PPD-Q sampling and analysis. Glass bottles with PTFE-lined caps minimized sorption. Borosilicate glass fiber filters provided the highest recovery. 6PPD-Q was stable for at least 5 months in pure lab solutions and for 75 days at 5°C with minimal headspace in surface water and stormwater. Results also indicated samples can be frozen to extend holding times. 6PPD was not detected in any of the 526 analyzed samples. There were no detections of 6PPD-Q at agricultural or forested sites. 6PPD-Q was frequently detected in stormwater (57%, N = 90) and from urban-impacted sites (45%, N = 276), with concentrations ranging from 0.002-0.29 µg/L. The highest concentrations, above the lethal level for coho salmon, occurred during stormwater runoff events, highlighting the importance of capturing episodic runoff events in urban areas near ecologically relevant habitats or nursery grounds for sensitive species.
https://www.sciencedirect.com/science/article/pii/S0045653524017247/pdfft?md5=ac922ad9adbb2de9898c77ac04ee3e79&pid=1-s2.0-S0045653524017247-main.pdf

IS FUCUS A SUITABLE BIOMONITORING ORGANISM FOR POLYCYCLIC AROMATIC HYDROCARBON CONTAMINATION? A STUDY FROM THE FAROE ISLANDS

Knofler, I.H., K.E. Andersson, R.L. Becker, S. Christiansen, N.J Nielsen, and J.H. Christensen.
Environmental Science and Pollution Research 31:26699-26712(2024)

Fucus was sampled in the Faroe Islands to evaluate seaweed as a biomonitoring organism for PAHs. Nineteen PAHs, including the EPA 16, and four groups of alkylated PAHs were quantified using GC-MS analysis of extracts obtained using a modified QuEChERS method with ultrasonication in acetonitrile, back-extraction into hexane, and Florisil® cleanup. Samples from the harbor of Torshavn collected at high tide were the most contaminated (1.3×102-1.7×102 ng/g wet weight). All samples contained a factor of 10 higher concentrations of alkylated PAHs compared to their parent compounds, suggesting that Fucus may be suitable as a biomonitoring organism for PAH pollution. Differences between samples collected near each other and on different days were observed (same range of RSD 14-120% and 60-102%, respectively), suggesting that water exchange, tide levels, and direct exposure to surface diesel pollution strongly influence contaminant uptake in Fucus. The findings stress the need for further evaluation of the sampling strategy.
https://pmc.ncbi.nlm.nih.gov/articles/PMC11052821/pdf/11356_2024_Article_32658.pdf

Return to top

General News

EPA'S PFAS STRATEGIC ROADMAP: THREE YEARS OF PROGRESS

US EPA, EPA-800-K-24-002, 17 pp, 2024

This document details significant advancements in addressing PFAS contamination in 2024. Key achievements include:

- **Protecting Drinking Water:** In April 2024, EPA established the first federal, legally enforceable drinking water standards for several PFAS compounds, aiming to reduce exposure for ~100 million people. EPA also collected data on 29 different PFAS in drinking water from ~10,000 water systems to inform future protective actions.
- **Cleaning Up PFAS Contamination:** EPA finalized the designation of PFOA and PFOS as hazardous substances under CERCLA. This designation empowers the EPA to hold polluters accountable for investigations and cleanups. EPA also updated its guidance and screening levels based on new scientific findings to enhance site assessments and decision-making processes.
- **Advancing Chemical Safety:** Since January 2021, EPA has taken numerous actions under TSCA and other laws to protect people from PFAS, considering risks to vulnerable populations

like children. For PFAS where manufacture and processing have ceased, EPA issued Significant New Use Rules to prevent new uses without prior review.

- **Investing in Research:** EPA has invested in research to enhance understanding of PFAS, including developing new methods, assessing human health and environmental risks, and exploring technologies for detection and remediation. This research supports the agency's regulatory actions and informs stakeholders about PFAS-related risks.

These efforts reflect the EPA's commitment to following the science, leveraging available tools and authorities, holding polluters accountable, and investing resources to protect communities from PFAS contamination. https://www.epa.gov/system/files/documents/2024-11/epas-pfas-strategic-roadmap-2024_508.pdf

A GUIDE FOR EPA REGIONS ON PLANNING LUST CLEANUPS IN A CHANGING CLIMATE

U.S. EPA, EPA 510-F-24-001, 10 pp, 2024

This guide aims to help EPA's Leaking Underground Storage Tank cleanup project managers identify, mitigate, and adapt to climate change risks for corrective action projects where EPA is the lead agency. It supplements the UST Flood and Wildfire Guides that help owners and operators prepare for flood and wildfire effects on UST facilities. This guide may also be useful when working with Tribes, UST owners and operators, and state and federal partners. https://www.epa.gov/system/files/documents/2024-05/lust-cleanups-in-a-changing-climate-april-2024.pdf

DEMONSTRATING TECHNOLOGIES FOR TREATING SOIL AND GROUNDWATER IMPACTED BY 1,4-DIOXANE

Schnoor, J., R. Simmer, and C. Bell. SERDP & ESTCP Webinar Series, January 2025

This SERDP and ESTCP webinar focuses on DoD-funded research efforts to remediate 1,4-dioxane at DoD facilities. Specifically, investigators will discuss bench-scale testing to configure commercially available membranes for 1,4-dioxane bioreactor treatment and efforts to demonstrate phytoremediation for treating 1,4-dioxane and chlorinated solvent co-contaminants in groundwater. https://serdp-estcp.mil/events/details/8aee5367-6867-4069-a7a8-af5328906042/demonstrating-technologies-for-treating-soil-and-groundwater-impacted-by-14-dioxane

HIGH-RESOLUTION SITE CHARACTERIZATION AND THE DEVELOPMENT OF A BETTER CONCEPTUAL SITE MODEL: A NAPL RELEASE SITE CASE STUDY

Davidson, K. | RemTech 2024: Remediation Technologies Symposium, 16-18 October, Banff, Alberta, Canada, 40 slides, 2024

This presentation highlights the advantages of high-resolution site characterization (HRSC) technologies, particularly the Ultraviolet Optical Screening Tool (UVOST), which provides valuable data for assessing and managing risks associated with petroleum hydrocarbon contamination. By combining HRSC tools with traditional methods, more refined data on site stratigraphy, contaminant distribution, transport, and fate can be collected, enhancing the understanding of site dynamics. UVOST employs laser-induced fluorescence (LIF) for real-time, in situ field screening of petroleum hydrocarbon-impacted soils. When paired with an electrical conductivity sensor, it provides a comprehensive understanding of contaminant sources and stratigraphy, offering deeper insights into plume dynamics at contaminated sites. Integrating HRSC tools with targeted soil and water sampling enhances understanding of NAPL distribution, enabling more informed risk management and effective remediation strategies. These strategies can and have been applied within the oil and gas industry to better inform remedial activities and planning to allow for the development of cost-effective remedial solutions at contaminated sites.
Slides: https://esaa.org/wp-content/uploads/2024/10/RT2024-DAVIDSON.pdf
Longer Abstract: https://esaa.org/wp-content/uploads/2024/09/RT2024-program-Abstracts-18.pdf

A REVIEW OF SELECTED ALTERNATIVE REMEDIATION METHODS FOR PFAS CONTAMINATION

Gal, A.O.O., M.E. Astrom, M.E.M. Filipsson | Remediation 35(2):e70007(2024)

Research reviewed nine remediation methods and their efficacy and suitability under different environmental conditions to treat various PFAS. The evaluation included the suitability of the remediation methods for soil or water remediation; in situ or ex situ use; effectiveness for different PFAS; cost-effectiveness; regenerative capabilities; susceptibility to organic material, other substances, or pH; potential for PFAS-concentrated waste production; and past use in large-scale remediation projects. https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70007

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