Entries for October 1-15, 2024

Market/Commercialization Information

F -- R7 GRANBY SUBDISTRICT, OPERABLE UNIT 01 AND 02 REMEDIAL ACTION, NEWTON COUNTY, MO (PRESOL)
U.S. Environmental Protection Agency, Region 7 Contracting Office, Lenexa, KS
Contract Opportunities on SAM.gov 68HE0725R0007, 2024

When this solicitation is released on or about February 10, 2025, it will be competed as a service-disabled veteran-owned small business (SDVOSB) set-aside under NAICS code 562910. EPA Region 7 intends to issue a Request for Proposals for a non-residential, site-specific contract for remedial actions for mine waste located at the Granby Subdistrict, Operable Unit 01 and 02 of the Newton County Mine Tailings Superfund site. The Granby Subdistrict is located in the central portion of Newton County, Missouri. It has been subdivided into several areas for design and remediation purposes. Tasks will consist of site remediation of soil surficial mine waste areas, contaminated soil, and contaminated intermittent stream sediment. The primary activities associated with the remedial action involve excavation, consolidation, and disposal of mine waste and associated contaminated soil/sediments, property restoration, and revegetation. EPA anticipates an indefinite delivery/indefinite quantity with fixed unit prices contract consisting of a base period and four 12-month option periods. There is no solicitation at this time. https://sam.gov/opp/8d475827a5794dffad494058f85df71f/view

S -- ENVIRONMENTAL IDIQ SERVICES FOR HAZARDOUS WASTE, HAZARDOUS MATERIAL, OTHER REGULATED WASTE, AND SPILL RESPONSE AT JOINT REGION MARIANAS, GUAM (PRESOL)
U.S. Department of the Navy, Naval Facilities Engineering Systems Command, Joint Region Mariana Islands
Contract Opportunities on SAM.gov N4019225R5000, 2024

When this solicitation is released on or about November 25, 2024, it will be competed as a total small business set-aside under NAICS code 562112. The Naval Facilities Engineering Systems Command intends to issue a Request for Proposals for environmental services for hazardous waste, hazardous material, other regulated waste, and spill response for all supported component and Tenant Commands under Joint Region Marianas. The task orders under this contract will include operating a Conforming Storage Facility; management of Less-than-90-Day Storage Facilities; management of satellite accumulation sites and initial accumulation points; daily management, collection and disposal of hazardous material, hazardous waste, and other regulated waste such as but not restricted to asbestos, lead-based paint, and PCBs; occasional management, disposal, and collection of non-HW; sampling, testing, and laboratory analysis for hazardous waste, regulated waste, and unknown waste determination; oil and hazardous substance spill response, cleanup, sampling, laboratory analysis, and disposal. There is no solicitation at this time. https://sam.gov/opp/1b2f83389d824374aa0c6405603f2f4d/view

F -- REMEDIATION SERVICES AT OPERABLE UNITS (OUS) 5 (SHORE ROAD) AND 6 (MORGAN FRANCIS) AT THE RAYMARK SUPERFUND SITE IN STRATFORD, CT (SOL)
U.S. Army Corps of Engineers, North Atlantic Division, New England District, Concord, MA
Contract Opportunities on SAM.gov W912WJ25R0001, 2024

This is a total small business set-aside under NAICS code 562910. The U.S. Army Corps of Engineers New England District seeks a contractor to remediate Operable Unit (OU) 5 and OU6 at the Raymark Superfund Site in Stratford, Connecticut. The Raymark Superfund Site includes areas contaminated due to manufacturing processes at the former Raymark facility. Specifically, contaminated waste material was used as fill in various locations within the Town of Stratford, CT. The OU5 remediation requires excavating and offsite disposing ~10,000 yd^3 of contaminated soil (primarily PCBs, metals, and asbestos) and site restoration. OU6 property was a historically low-lying area filled with Raymark waste. Remediation requires excavating ~5,000 yd^3 of waste from an adjacent creek, restoring and consolidating the waste on the Morgan Francis Property, and constructing a RCRA hazardous waste landfill cap and supporting infrastructure. The area of the Morgan Francis site to be capped is ~6 acres. The to-be-constructed RCRA cap will have an average thickness of 4 ft and consist of a low permeability liner system with soil cover. The site abuts a residential area of town; significant air monitoring, dust control, traffic management, and public safety requirements are part of this project. This project has these major components: remediation, including excavating and restoring OU5; remediation, including excavating and restoring a section of creek adjacent to Morgan Francis; RCRA cap constructed per design and specifications; Supporting infrastructure, including but not limited to, storm-water basins, swales, gas vent system, utility corridors, access roads; Robust air monitoring and dust prevention practices. The award will be a five-year Indefinite Delivery/Indefinite Quantity contract with firm-fixed-price task orders. Offers are due by 1:00 PM EST on December 2, 2024. https://sam.gov/opp/a7e2c7d2f0f44a13a067d9c4c7e145f4/view

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Cleanup News

SIMULTANEOUS REMEDIATION OF ARSENIC AND ORGANIC CHEMICALS CONTAMINATED SOIL AND GROUNDWATER USING CHEMICAL OXIDATION AND PRECIPITATION/STABILIZATION: A CASE STUDY
Li, G., Y. Liu, W. Huang, L. Chen, P. Heroux, and Y. Liu.
Environmental Science and Pollution Research 30(36):86478-86483(2024)

This article presents a case study on arsenic (As) remediation in soil and benzo(a)pyrene, total petroleum hydrocarbons, and As remediation in groundwater. A mixture of 20% sodium persulfate, 40% ferrous sulfate ($FeSO_4$), and 40% portland cement, was applied to contaminated soil to oxidize and immobilize As. As a result, the total amount and lixivium As concentrations were constrained under 20 mg/kg and 0.01 mg/L, respectively. As and organic contaminants were used to treat groundwater with $FeSO_4$/ozone and $FeSO_4$/hydrogen peroxide with mass ratios of 1:5 and 1:8, respectively. Continuous monitoring in 22 monitoring wells showed that all contaminants in treated groundwater met the groundwater standard. In addition, the risk of secondary pollution and operation costs was effectively reduced by proper disposal and resourceful utilization.

GASOLINE TANKER TRUCK ROLLOVER REMEDIATED USING QHRSC AND AN ACTIVATED CARBON INJECTATE PERMEABLE REACTIVE BARRIER
Pizarro, D. | Florida Remediation Conference, 4-6 November, Orlando, FL, abstract only, 2024

In 2015, a gasoline transport tanker struck a trailer parked on the shoulder of a rural highway, resulting in the release of ~4,000 gallons of fuel near major surface water features. The primary challenges were protecting nearby surface water bodies and accessing the areas of contamination due to a state highway with multiple buried utilities and surrounded by thick-forested residential properties. Initial response activities included soil excavation, resulting in the removal of ~1,100 tons of petroleum hydrocarbon (PHC)-impacted soil. Installation and sampling of groundwater monitoring wells indicated contaminant plume expansion. Two phases of work were performed to reduce LNAPL saturation and enhance the reduction of petroleum hydrocarbon mass. Phase I consisted of updating and revising the existing (post-excavation) conceptual site model, which focused on a remedial design characterization event using quantified high-resolution site characterization data. Phase II involved installing a series of six BOS 200® (42,700 lbs total) permeable reactive barriers to capture and treat LNAPL and PHC impacts within the saturated soil and groundwater plume. An adsorption platform of activated carbon (AC) coupled with AC-enhanced microbial degradation (30,800 lbs) was injected to manage the LNAPL in the short term, while allowing continued, long-term treatment of dissolved phase mass utilizing the BOS 200 biological processes. Performance monitoring over > 4 yrs demonstrated the continued biological degradation of PHCs in groundwater. PHC mass reduction was ≥ 94% at 1,700 days post-injection. The series of six PRBs has sufficiently protected the nearby surface water bodies. Post-injection performance monitoring data shows the continued biological degradation of PHC-impacted groundwater. *More information:*
https://cdn.astenvironmental.com/wp-content/uploads/2023/09/05140457/AST_Project_Summary_TawasCity_v2.pdf

LABORATORY AND PILOT TESTING FOR REMOVAL OF CHROMIUM AND NICKEL FROM GROUNDWATER
Dore, S. | 13th International Conference on Remediation of Chlorinated and Recalcitrant Compounds, 2-6 June, Denver, CO, 16 slides, 2024

At a former industry site in Michigan, Cr(VI) and nickel were present in groundwater in separate but overlapping plumes contained within a slurry wall. A P&T system maintained an inward gradient and prevented the migration of impacted groundwater. In situ treatment of chromium and nickel in groundwater was required to shutdown the P&T system. A lab treatability study was performed to determine the reagents and doses of sulfur-containing reducing agents needed to remove Cr(VI) and nickel from the groundwater, followed by pilot studies to test the treatments and doses in the field. After a successful pilot test, soil cores were removed from the pilot study area to assess the reversibility of the chromium and nickel precipitation. Low pH and highly oxidizing conditions were tested to determine whether the precipitated metals could be re-mobilized. The lab study determined that the best removal of chromium without affecting the groundwater pH was obtained with sodium dithionite. Good removal of nickel was observed using sodium sulfide. Pilot results showed that the sodium dithionite was consumed before moving downgradient, therefore a higher dose was tested in a subsequent study. Although good chromium treatment was observed, the higher sodium dithionite dose did not reduce nickel. Since sodium sulfide performed well in the lab study to precipitate nickel, sodium dithionite, sodium sulfide, and a mixture of sodium dithionite and sodium sulfide were tested in the next study and were also successful in precipitating the nickel. The reversibility testing performed on the soil cores showed that precipitated chromium could not be mobilized by low pH but could be mobilized by high doses of a chemical oxidant. Precipitated nickel could not be mobilized by a chemical oxidant but could be mobilized by extremely low pH (< 3). As these conditions were not likely to occur naturally in the field, the in situ treatment was approved, and full-scale implementation was performed. https://xcdacademy.s3.amazonaws.com/battelle/2024_Chlorinated/A12_1325_374_Dore.pdf

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Demonstrations / Feasibility Studies

NEW REMEDIATION TECHNOLOGY FORMED BY COMBINING TWO WELL ESTABLISHED REMEDIATION TECHNOLOGIES: IN SITU STABILIZATION (ISS) AND IN SITU CHEMICAL OXIDATION (ISCO)
Telesz,s., J. Molin, and B. Smith. | RemTech 2024: Remediation Technologies Symposium, 16-18 October, Banff, Alberta, Canada, 27 slides, 2024

In situ chemical oxidation (ISCO)/in situ stabilization (ISS) was evaluated in a series of bench and pilot-scale tests where varying dose combinations of sodium persulfate with different

binders were analyzed based on its effect on soil stability, hydraulic conductivity, and leaching. A history of the development of the two technologies, review of the scientific theory, and the limitations of each technology are discussed in this presentation. Data from bench-scale experiments and field applications are presented to illustrate how a combined application can achieve concentration and stabilization goals. Data showed that adding sodium persulfate can make an ISS application more efficient by reducing the total amount of additives (binder + oxidizing agent), the mass of displaced soil, and the need for further handling and disposal of excess soil mass. The addition of sodium persulfate also resulted in lower hydraulic conductivity and higher strength compared to soil treated with cement only at a similar dose of cement. Field trial data illustrated a reduction in the concentration of more mobile substances such as benzene, naphthalene, and other lighter petroleum products to under-exposed action targets. The remaining heavier hydrocarbons were bound with the addition of binders and achieved the targets for reduced leachability.
Slides: https://esaa.org/wp-content/uploads/2024/10/RT2024-Telesz.pdf
Longer Abstract: https://esaa.org/wp-content/uploads/2024/09/RT2024-program-Abstracts-43.pdf

PFAS IN KARST: AN APPLICATION OF THE SENTINEL PASSIVE SAMPLER FOR PFAS MEASUREMENT
Osorno, T. I Missouri Waste Control Coalition Environmental Conference, 21-23 July, Osage Beach, MO, 24 slides, 2024

A new passive sampler designed for measuring PFAS in water and a recent application at a karst site in Missouri is summarized in this presentation. Results highlight primary exposure pathways for PFAS in karst and demonstrate the importance of stormwater management and treatment in karst terrane. Sentinel samplers are commercially available and can be analyzed by several labs. https://www.mowastecoalition.org/resources/Documents/2024%20conference/2024%20preserntations/PFAS%20in%20Karst.pdf

IN SITU THERMAL TREATMENT OF PFAS IN VADOSE ZONE SOILS
Kornuc, J. I RemTech 2024: Remediation Technologies Symposium 2023, 11-13 October, Banff, Alberta, Canada, abstract only, 2024

A field-scale pilot test was conducted at a former fire training area to test in situ thermal PFAS desorption from vadose zone soil (PFAS concentrations >1,900 ug/kg). The soil was heated to an average temperature of 403°C for ~ 20.5 weeks using thermal conduction heating. PFAS concentrations were measured in soil before and after the pilot test and subsurface vapor collected during system operations was sampled throughout the heating process. The condensate generated was also regularly sampled for PFAS. The off-gas and condensate were treated using vapor and liquid-phase GAC before discharge. Condensate subsamples were sent to the Colorado School of Mines for hydrothermal alkaline and ultraviolet-sulfite destructive treatment. When a temperature of ≥ 350°C was maintained for 7 days (following vaporization of soil moisture), a 99.5% average PFOS reduction in soil was observed. Not all of the treatment area was uniformly treated; suspected long-term shallow water incursion on the eastern side of the test area limited heating to sustained target temperatures and hampered PFAS removal from soil. Several PFAS were also present on the eastern side after treatment that were not present before heating, suggesting that transformation occurred during the pilot test. Condensate concentrations peaked 30 days after heating began and then decreased. GAC and hydrothermal alkaline treatment were effective at treating the condensate and vapor to below the discharge limits. Concentrations of PFAS measured in the vapor and condensate streams were used to calculate a mass balance. *See presentation from 2024 Battelle Chlorinated Conference:*
https://xcdacademy.s3.amazonaws.com/battelle/2024_Chlorinated/E3_1235_731_Fitzgerald.pdf

3D GEOREMEDIATION: A DIGITAL HYDROGEOPHYSICAL–CHEMICAL CLONE AND VIRTUAL HYDRAULIC BARRIER WITH GROUNDWATER CIRCULATION WELLS (GCWS) FOR GROUNDWATER REMEDIATION
Ciampi, P., G. Felli, D. Feriaud, C. Esposito, and M.P. Papini.
Sustainability 16:5216(2024)

A study aimed to show the capabilities of a 3D digital interface that seamlessly integrates multi-source data to elucidate site-specific contamination dynamics and steer remediation strategies aligned with the ethos of remediation geology. Digitization of stratigraphic, piezometric, chemical, and membrane interface probe (MIP) data underpinned geomodeling endeavors and yielded a meticulously crafted, data-driven conceptual site model (CSM) at a chlorinated solvent-contaminated site. The hydrogeochemical and hydrogeophysical data were interpolated to build a volumetric, digital 3D model illustrating data-driven elements. The comprehensive 3D clone adeptly delineated secondary contamination sources and rendered the contamination plume visible within a georeferenced framework, mirroring the nuanced interplay of stratigraphic nuances and groundwater path. A data-centric approach to modeling facilitated design of the first hydraulic virtual barrier leveraging groundwater circulation well (GCW) technology, its geometry finely attuned to intercept the contamination plume originating from source dissolution and aligning with preferential groundwater flow trajectories. Conventional hydrochemical monitoring and multilevel sampling substantiated the discernible reduction in chlorinated solvent concentrations across various depths within the aquifer horizon, affirming the efficacy of GCWs in their virtual barrier configuration. Findings highlight the effectiveness and limited groundwater consumption of the virtual barrier compared to the onsite pump-and-stock system. *This article is* ***Open Access*** *at*https://www.mdpi.com/2071-1050/16/12/5216.

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Research

SIMULATION OF HEXAVALENT CHROMIUM REMOVAL BY ELECTROCOAGULATION USING IRON ANODE IN FLOWTHROUGH REACTOR
Hojabri, S., L. Rajic, Y.W. Zhao and A.N. Alshawabkeh.
Journal of Hazardous Materials 476:135195(2024)

An electrocoagulation (EC) model was developed for Cr(VI) reduction and precipitation using iron electrodes. Parallel removal mechanisms such as Cr adsorption on ferrihydrite and direct reduction at the cathode were assumed negligible due to low Cr(VI) concentration. The reaction model presented for batch system represents species complexation, precipitation/dissolution, acid/base, and oxidation-reduction reactions. Batch reactor simulation was verified using experimental data that considered the effect of initial Cr concentration, pH, volumetric current density, and ionic strength. The model coupled multicomponent ionic transport in MATLAB with the chemical reaction model in PHREEQC as a widely used computational programming tool and a geochemical reaction simulator with comprehensive geochemistry databases. The suggested current density was 0.05 -0.3mA/cm^2 and the surface-to-volume ratio in the batch reactor was considered to be 0.017 1/cm. Design parameters were presented for the operation of a flowthrough Cr(VI) removal using electrocoagulation by an iron electrode to treat Cr(VI) in the 10-50 mg/L range. The operational parameters for a flowthrough EC reactor for Cr(VI) removal is suggested to follow 0.05mA/cm^2 ≤ 3nFeQ$_C$Cr(VI)inlet ≤ 0.3mA/cm^2.

TACKLING CHALLENGES OF LONG-TERM ELECTRODE STABILITY IN ELECTROCHEMICAL TREATMENT OF 1,4-DIOXANE IN GROUNDWATER
Chen, W., K. Rigby, H. Lim, D. Kim, and J. Kim
Environmental Science & Technology 58(30):13552-13561(2024)

This study addresses electrode stability over long-term operation when employing electrochemical cells in practical groundwater treatment. The aim of the study was to simulate realistic environmental scenarios by significantly extending the experimental time scale, testing a flow-through cell in addition to a batch reactor, and employing an electrolyte with a conductivity equivalent to that of groundwater. First, a robust titanium suboxide nanotube mesh electrode was constructed and was utilized as both anode and cathode. Then, a pulsed electrolysis strategy was implemented in which reactive oxygen species are generated during the anodic cycle, and the electrode is regenerated during the cathodic cycle. Under optimized conditions, single-pass treatment through the cell (effective area 2 cm^2) achieved 65-70% removal efficiency for 1,4-dioxane in the synthetic groundwater for over 100 h continuous operation at a low current density of 5 mA/cm^2 and a water flux of 6 L/m^2/h.

QUANTITATIVE THERMODYNAMIC EXPOSURE ASSESSMENT OF PCBS AVAILABLE TO SANDWORMS (ALITTA VIRENS) IN ACTIVATED CARBON REMEDIATED SEDIMENT DURING ONGOING SEDIMENT DEPOSITION
Gidley, P., G. Lotufo, S. Schmidt, P. Mayer, and R.M. Burgess.
Environmental Science: Processes & Impacts 26(5):814-823(2024)

Marine mesoscale studies with sandworms (*Alitta virens*) were conducted to isolate important processes governing exposure and bioaccumulation of PCBs at contaminated sediment sites. Ex situ equilibrium sampling with silicone-coated jars, and in situ passive sampling with low-density polyethylene were used to determine the performance of an activated carbon amendment remedy applied to the bed sediment. A quantitative thermodynamic exposure assessment showed that PCB concentrations in polymers at equilibrium with the surficial sediment were suited to measure and assess the remedy effectiveness with regard to PCB bioaccumulation in worms. In practice, monitoring the performance of sediment remedies should utilize a consistent and predictive form of polymeric sampling of the sediment. Ex situ equilibrium sampling of the surficial sediment was the most useful for understanding changes in bioaccumulation potential due to the applied remedy during bioturbation and ongoing sediment and contaminant influx processes. The ultrathin silicone coatings of the ex situ sampling provided fast PCB equilibration between the sediment interstitial water and the polymer, and the multiple coating thicknesses were applied to confirm equilibrium and the absence of surface sorption artifacts. Ex situ equilibrium sampling of surficial sediment could fit into existing frameworks as a robust and cost-effective tool for contaminated sediment site assessment. https://pubs.rsc.org/en/content/articlepdf/2024/em/d3em00405h

CHARACTERIZATION OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) AND OTHER CONSTITUENTS IN MSW LANDFILL LEACHATE FROM PUERTO RICO
Robey, N., Y. Liu, M. Crespo-Medina, J. Bowden, H. Solo-Gabriele, T. Townsend, and T. Tolaymat. I Chemosphere 358:142141(2024)

Twenty landfill leachate samples were collected from three municipal solid waste (MSW) landfills in Puerto Rico, and results were compared against landfills nationally and within Florida. The samples collected in Puerto Rico underwent physical-chemical analysis and a quantitative analysis of 92 PFAS. Samples included discrete leachate types, such as leachate, gas condensate, and leachate treated onsite. A total of 51 PFAS were detected above quantitation limits, including perfluorohexylphosphonic acid, which has not been reported previously in landfill leachate. ∑PFAS concentrations (mean: 38,000 ng/L) and concentrations of individual PFAS were significantly higher than other reported MSW landfill leachate concentrations. The profiles of leachates collected from onsite treatment systems indicated possible transformation of precursor PFAS as a result of treatment processes. For example, oxidizing conditions may facilitate aerobic transformation, increase the concentrations of PFAAs, and possibly increase the apparent ∑PFAS concentration. Extreme climate events, including rising temperatures and more frequent hurricanes, have placed additional strain on the solid waste management infrastructure on the island – adding complexity to an

already challenging PFAS management issue. As concern grows over PFAS contamination in drinking water, findings should inform solid waste and leachate management decisions to minimize PFAS emissions in island environments.

PERSISTENCE OF PFOA POLLUTION AT A PTFE PRODUCTION SITE AND OCCURRENCE OF REPLACEMENT PFASS IN ENGLISH FRESHWATERS REVEALED BY SENTINEL SPECIES, THE EURASIAN OTTER (*LUTRA LUTRA*)
O'Rourke, E., S. Losada, J.L. Barber, G. Scholey, I. Bain, M.G. Pereira, F. Hailer, and E.A. Chadwick. I Environmental Science & Technology 58(23):10195-10206(2024)

Concentrations of 33 PFAS were determined in 20 Eurasian otters sampled 2015-2019 along a transect away from a factory that used PFOA in polytetrafluoroethylene manufacturing. Despite ending usage in 2012, PFOA concentrations remained high near the factory (>298 µg/kg ww, <20 km from factory) and declined with increasing distance (<57 µg/kg ww, >150 km away). Long-chain legacy PFAS dominated the ∑33PFAS profile, particularly PFOS, PFOA, PFDA, and PFNA. Replacement compounds PFECHS, F-53B, PFBSA, PFBS, PFHpA, and 8:2 FTS were detected in ≥19 otters. Replacement PFAS concentrations were generally lower than legacy compounds (max: 70.3 µg/kg ww and 4,640 µg/kg ww, respectively). The study underscores the utility of otters as sentinels for evaluating mitigation success and highlights the value of continued monitoring to provide insights into the longevity of spatial associations with historical sources. Lower concentrations of replacement than legacy PFAS likely reflect their lower bioaccumulation potential and more recent introduction.

TISSUE ACCUMULATION AND BIOTRANSFORMATION OF 6PPD-QUINONE IN ADULT ZEBRAFISH AND ITS EFFECTS ON THE INTESTINAL MICROBIAL COMMUNITY
Liao, X.-L., Z.-F. Chen, Q.-Y. Liu, J.-M. Zhou, W.-X. Cai, Y. Wang, and Z. Cai.
Environmental Science & Technology 58(23):10275-10286 (2024)

A study explored *N*-(1,3-dimethylbutyl)-N′-phenyl-p-phenylenediamine quinone (6PPD-quinone or 6PPDQ) toxicokinetics and intestinal microbiota composition in adult zebrafish during a 14-day exposure to environmentally realistic concentrations followed by a 7-day recovery phase. Predominant accumulation occurred in the brain, intestine, and eyes, with the lowest levels in the liver. Six metabolites underwent hydroxylation, with two additionally undergoing *O*-sulfonation. Semiquantitative analyses revealed that the predominant metabolite featured a hydroxy group situated on the phenyl ring adjacent to the quinone, which was further validated by assessing enzyme activity and determining in silico binding interactions. The binding affinity between 6PPDQ and zebrafish phase I and II enzymes exceeded that with the corresponding coho salmon enzymes by 1.04-1.53 times, suggesting a higher potential for 6PPDQ detoxification in tolerant species. Whole-genome sequencing revealed significant increases in the genera *Nocardioides* and *Rhodococcus* after exposure to 6PPDQ. Functional annotation and pathway enrichment analyses predicted that these two genera would be responsible for the biodegradation and metabolism of xenobiotics. Findings offer crucial data for comprehending 6PPDQ-induced species-specific toxicity.

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General News

6PPD & 6PPD-QUINONE
Interstate Technology & Regulatory Council (ITRC) Web-based document 6ppd, 2024

This ITRC document informs state, tribal, and municipal agencies that may need to learn more about 6PPD and 6PPD-q to pursue policies and regulations regarding these chemicals. The information is current as of March 2024 (with a few exceptions of updated information). Given the active research on this topic, additional studies have been published since the document was completed. While the intent of the document is to present the most salient and recently available information on 6PPD and 6PPD-q, interested readers are encouraged to search the scientific literature for newly available information. Though the synonym 6PPD-q was consistently and uniformly used throughout the document, the ITRC team is aware that some state and federal agencies are in the process of phasing out the 6PPD-q synonym in favor of 6PPD-quinone, 6PPDQ, or 6PPD-Q. In September 2023, ITRC published a focus sheet entitled What We Know: 6PPD and 6PPD-quinone that offered a first look and overview of 6PPD and 6PPD-q using available information through July 2023. The ITRC team also anticipates recording an interactive outreach session where each section of the team's final work product is discussed. https://6ppd.itrcweb.org/

SUSTAINABLE REMEDIATION AND DECOMMISSIONING IN PRACTICE
Bardos, P., S. Bullock, K. Gillin, and E. Porcaro. I Pacific Northwest National Laboratory RemPlex seminar, 91 minutes, 2024

This presentation explores how to incorporate sustainable outcomes into the planning phases of remediation and decommissioning projects, how these outcomes are measured and vary across the breadth of activities, and specific approaches and initiatives that can provide confidence in reaching sustainable goals. An emphasis is placed on the need for remediation and decommissioning projects to be sustainable, with a general understanding that this means the outcomes of such projects balance environmental, economic, and social considerations. Conceptually, the linkages between these considerations are well-defined and broadly endorsed. In practice, however, achieving sustainable solutions can be a significant challenge, particularly when measured across the many discrete activities that may be undertaken across typically protracted project life cycles. In addition, identifying and implementing sustainable solutions often requires extensive engagement across all stakeholder groups and resolution of sometimes competing objectives and priorities.
https://www.pnnl.gov/projects/remplex/seminars/sustainable-remediation-and-decommissioning-practice

REVOLUTIONIZING ENVIRONMENTAL SITE ASSESSMENTS WITH DIGITAL TOOLS AND SOFTWARE
Schindler, R. I Missouri Waste Control Coalition Environmental Conference, 21-23 July, Osage Beach, MO, 27 slides, 2024

Digital tools and sophisticated software are driving significant advancements in environmental site assessments, enhancing the efficiency, cost-effectiveness, and accuracy of sample collection and the generation of conceptual site model (CSM) reports. The emergence of digital sampling tools has marked a significant advancement in environmental geology, offering more precise and consistent data while reducing the potential for human error. The integration of these tools with advanced software platforms has streamlined data aggregation and analysis, enabling the rapid development of detailed and accurate CSM reports. The adoption of digital tools and software in environmental site assessments is a necessary evolution. This shift towards technology-driven approaches is reshaping environmental risk management, offering increased efficiency, accuracy, and cost-effectiveness.
https://www.mowastecoalition.org/resources/Documents/2024%20conference/2024%20preserntations/Presentation%207-22-24%20-%20SampleServe.pdf

BACTERIAL DEGRADATION OF PERFLUOROALKYL ACIDS
Smorada, C., M. Sima and P. Jaffe. Current Opinion in Biotechnology 88:103170(2024)

This review focuses on the defluorination of PFAAs by bacteria, highlighting key studies that report PFAA degradation products, specific bacteria, and relevant genes. The studies discuss trends in anaerobic versus aerobic conditions with specific bacterial species or consortia. The holistic review seeks to elucidate the state of PFAA biodegradation research and discuss the need for future research for environmental applications.

PASSIVE FLUX METERS AS A HIGH-RESOLUTION CONTAMINANT DISTRIBUTION AND SITE CHARACTERIZATION TOOL
Parke, C. I Missouri Waste Control Coalition Environmental Conference, 21-23 July, Osage Beach, MO, 38 slides, 2024

Vertical application precision is critical to success for in situ remediation; otherwise, resources may be squandered. Flux meters, such as REGENESIS' FluxTracer, can be pivotal in this endeavor, as they provide granular data on contaminant movement at a 1-foot vertical scale, enabling precise delineation of contaminant transport zones. By identifying these zones accurately, remedial efforts can be optimized, either by refining treatment zones or expanding coverage efficiently. FluxTracer's user-friendly design streamlines deployment and data collection, offering substantial time and cost savings

The Technology Innovation News Survey welcomes your comments and suggestions, as well as information about errors for correction. Please contact Michael Adam of the U.S. EPA Office of Superfund Remediation and Technology Innovation at adam.michael@epa.gov or (703) 603-9915 with any comments, suggestions, or corrections.

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