Technology Innovation News Survey

Entries for January 16-31, 2024

F -- BPA FOR ENVIRONMENTAL REMEDIATION SERVICES (COMBINE) U.S. Department of the Army, National Guard Bureau, Raleigh, NC Contract Opportunities on SAM.gov W9124224Q0012, 2024

This is a total small business set-aside under NAICS code 562910. The U.S. Department of the Army's North Carolina Army National Guard (NCARNG) intends to establish a Master BPA to facilitate the procurement of continuous Environmental Remediation Services. Throughout the year, NCARNG experiences spills of fuel, oil, hydraulic fluid, etc. The times, locations, and size of these spills are unknown. North Carolina Administrative Code (NCAC) 15 requires immediate clasmup and mitigation of all spills. NCARNG intends to issue a 5-year Blanket Purchase Agreement (BPA) with a commercial vendor to provide clean-up and mitigation services when required. The contractor shall be prepared to provide services 4 hours a day, 365 days a year as required. The contractor shall at all times maintain an adequate workforce for the uninterrupted performance of all tasks defined within this PWS. The Period of Performance of the BPA shall be five years. Annual BPA reviews shall be conducted, and the requirement shall be validated with the end user each year. Offers are due by 10:00 AM EDT on March 12, 2024. <u>https://stan.org/nor/sta1257/ide/sta54257/</u>

F – MULTIPLE AWARD ENVIRONMENTAL SERVICES (MAES 2024) MULTIPLE AWARD TASK ORDER CONTRACT (MATOC) (PRESOL) U.S. Army Corps of Engineers, North Atlantic Division, Baltimore, MD Contract Opportunities on SAM, gov W912DR2440003, 2025

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F - OPTIMIZED REMEDIATION CONTRACT (ORC) AT VANDENBERG SFB (VSFB). THIS REMEDIATION WILL INVOLVE INSTALLATION RESTORATION PROGRAM (IRP) AND MILITARY MUNITIONS RESPONSE PROGRAM (MMRP) SITES BASE WIDE U.S. Army Corps of Engineers, Los Angeles District, Los Angeles, CA Contract Opportunities on SAMagov W912PL24R014, 2022

When this solicitation is released on or about April 5, 2024, it will be competed as a full and open competition under NAICS code 562910. USACE intends to issue a solicitation for the maintenance of established remedies, optimization at applicable sites, and achievement of site-specific objectives. The Contractor shall undertake Environmental Remediation activities to achieve Performance Objectives at 32 Installation Restoration Program sites and 28 Military Munitions Response Program istes. The proposed procurement will use the "Set Value Tradeoff Process," in accordance with FAR 15.101-1, wherein offerors will submit both the technical and price proposals. The award may be made to other than the lowest-priced offer based on an evaluation of the proposals against the solicitation's evaluation criteria. There is no solicitation at this time. <u>https://sam.gov/opp/c1ech692ea2c439bb46390f73571945f/view</u>

F – R10 UPPER COLUMBIA RIVER SAMPLING AND REMOVAL ACTION TECHNICAL SUPPORT (PRESOL) U.S. Environmental Protection Agency, Region /, Lenexa, KS Contract Opportunities on SAM1, agov 68HCD244R014, 2024

When this solicitation is released on or about March 1, 2024, it will be competed as a total small business set-aside under NAICS code 562910. EPA Region 7 will be seeking the services of an experienced firm to provide Sampling and Removal Action Technical Support services within the Upper Columbia River Site. The primary focus of this requirement will be on residential properties within the Town of Northoport that are affected by commingled contamination from smelter operations. The objective of this constract is to reduce the human health risk of exposure to lead and arsenic by removing contaminated soils from the assigned properties within the greater Northport Area, and to provide necessary sampling autoport at the Upper Columbia River Site as needed. To achieve this, an additional round of volunta soil sampling at properties that have not been previously sampled; 2) complete a removal assessment and prioritization of properties for cleanup using data obtained during the current and previous sampling events; and 3) conduct time critical removal aclons at the properties for cleanup. The contract shall be required to comply with all applicable feetard, state and local laws and regulations. Remediation will be conducted pursuant to CERECAL as amended by the Superfund Amendments and Reauthorization Action, and National Contingency Pian requirements. EPA anticipates issuing a firm-fixed-price constract consisting of a one-year option periods. Estimated dollar value for this procurement is between \$25M - \$30M. There is no solicitation at this time. <u>https://fixam.com/upuno/fibilitation/fibi</u>

PAST, PRESENT, AND FUTURE ANATOMY OF AN OIL BRINE PLUME REMEDIATION NEAR POPLAR, MONTANA: A CASE STUDY Davis, A., B. Kamark, N. Sims, M. Roth, and J. Mocka, Groundwater Monitoring & Remediation 44(1):83-100(2024)

The Biere oil production well near Poplar. Montana. leaked brine and LNAPL to the shallow alluvial aquifer for several years before its final closure in 2002. Since 2008, 2.5 billion L of brine have been removed (~90%, of the original Cl mass). However, Cl has not reached background levels due to the reservoir of solutions entrained in the Bearpaw bedrock remnant from the lateral dense aqueous phase liquid flow across the alluvial/bddrock interface. After the removal of ~100,000L of product since 2006, residual LNAPL is now confined to 2.2 ha (5.5 acros), a decrease from the original 2.7 ha (6.6 acres) areal extent by 17%. The initial ~7.5 m thick product is stable at a maximum of ~1 m, however, LNAPL has infiltrated into fine-grained claysitil units, forming a smear zone in lenses 10 to 20m bgs. Ongoing to 20m bgs

IN-SITU SOIL REMEDIATION AT LOW PERMEABILITY SITES USING THE HYDRAULIC/PNEUMATIC FRACTURING (FRACIN) APPROACH Lhotsky, O. AquaConSoil 2023, Prague, Czech Republic, 12-14 September, 19 slides, 2023

Lhotsky, 0. Aquacon50i 2023, Prague, Czech Republic, 12-14 September, 19 slides, 2023 A study tested Frac-In technology, which enables in situ soil remediation at low-permeability sites that are difficult to remediate using conventional technologies by applying hydraulis/pneumatic fracturing. It can be used to inject strong chemical oxidants in combination with oxygen-release compounds to enhance the rate of aerobic biodegradation, and the injection of chemical reductants combined with organic substrates to enhance the rate of anaerobic biodegradation. The technology unsaturated zones. Remediation consisted of ISCR (using milled cast iron and sulfidated nanoscale zerovalent iron) and Enhanced Reductive Dechlorination (EDD) (using dried whey). A second pilot test was conducted at a site contaminated with and potassium persuphate mixture with different activation processes. Full-scale remediation using the Frac-In technology using studied using the first few months after injection, followed by a significant increase in the amount of dechlorinating bacteria and the degradation fractors in the saturated dunsaturated zones. Remediation of the injection of the characite and the degradation of most of the contamination in both the saturated and unsaturated zones. A significant increase in the hydraulic permeability of the aquifer along with good distribution of the injected remediaton additionated and the degradation of most of the contamination in both the saturated annescale zerovalent in origon the amount of dechlorinating bacteria and the degradation of most of the contamination in the saturated zones. A significant increase in the hydraulic permeability of the anglifer along with good distribution of the injected remediation section derase of 50% in VOC concentrations was observed four months following the injection. Injections at the Durchov site triggered the inorganic chemical reduction of both the hexavient chronium and chlorinated ethenes and a gradual increase in dechlorinating bacteria. Integritions

WETLAND+® TECHNOLOGY: TREATMENT OF HCH CONTAMINATED WATER BY A PASSIVE BIOLOGICALLY BASED REMEDIATION SYSTEM Mernik, M., P. Hrabak, and P. Brucek. 14th International HCH & Pesticides Forum, 21-24 February, Zaragoza, Spain, 23 slides, 2023

The first prototype of Wetland+ an innovative technology based on constructed wetlands for the treatment of pesticide-containiated waters, was installed at the Hajek repository in the Czech Republic, where between 3,000-5,000 tonnes of HCH isomers and chloroberzenes (CIB) were historically deposited. The remediation system is based on four-tected wetlands for the treatment of pesticide-containiated waters, was installed at the Hajek repository enters the sedimentation tank where dissolved Fe (in concentration >20 mg/L) should precipited and sediment. The first reactive state is a RB field with Fe chlory where water is desvigenated and converted to a reduced state. Subsequently, HCHs are partially dechlorinated, and CIBs are first mattive state is a state in daughter products descendent the device state. Subsequently, HCHs are partially dechlorinated, and CIBs are formed. The second reactive step is a system purifies the water, and the concentration of HCHs and their daughter products decrease below specified limits. Since 2021, the full-size Wetland+ system has been running in test mode on a 130 x 70 m area, have the efficiency of each decrease below specified limits. Since 2021, the full-size Wetland+ system has been running in test mode on a 130 x 70 m area, have the efficiency of each decrease below specified units to the vestem is to be system is drainage water with a flow of 1-3 L/s, and HCH and CIB concentrations of 50-260 Lg/L and 100-1300 Lg/L, respectively. During the first 14 months of persition, due to the system's tunning, the creased to nearly 100% for CIB and 97 % for HCH. and CIB series to a significant decrease in HCH mass discharge to the docrease) to 0.8-0.9 (docrease), doc 0.8-0.9 (docrease) to 0.8-0.9 (docrease), doc 0.8-0.9 (docrease), doc 0.8-0.9 (docrease), doc 0.8-0.9 (docrease). The interval is increased to nearly 100% for CIB and 97 % for HCH.

nstrations / Feasibility Studies

DEVELOPMENT, EVALUATION, AND TECHNOLOGY TRANSFER OF BMPS FOR OPTIMIZING REMOVAL OF PAHS, PCBS, PFAS, AND METALS FROM STORMWATER AT DOD SITES Simonich, S.M., R. Hilliard, and B. Parker. SERDP Project ER18-1230, 121 pp, 2022

Simonich, S.M., R. Hilliard, and B. Parker. SERDP Project ER18-12.01, 121 pp, 2022 The overall goals of this project were to develop (1) innovative stormwater control and treatment technologies that improve stormwater management, prevent sediment recontamination, and add to the existing water supply and (2) watershed modeling of new stormwater control processes that focus on sediment-related contaminants to provide information on the efficiency needed and the number of systems deployed to prevent sediment recontamination and increase stormwater (GAC, Biochan Basic[™]). EarthLife[™], and RemBind[®]). This Task was further extended to accommodate requests to include stormwater from DOD site Willow Grove and additional sorbert analysis (Calgon). (2) Improve lab-scale, mechanistic understanding of the fate and transport of heaver metals, PARS through vegetated biosvales containing native grasses, broadleaf plants, and their associated and unculte field-scale, mechanistic the above tasks to investigate the fate and transport of PARS, PCBs, and PFAS through vegetated biosvales containing native grasses, broadles plants, and their associated and outle for inscingto of PARS, PCBs, and PFAS through vegetated biosvales control motions (Calgon). (2) Improve lab-scale, mechanistic the above tasks to investigate the fate and transport of PARS, PCBs, and PFAS through vegetated biosvales control motions and uncreases there is an outle for mitroling on plant vester soil interactions for standard water quality parameters and sediment-associated PARS, and PFAS in FPAS Storm Water Management Model and validate the improved model for multiple storm events using the field experiment data collected in Task 3. The Final Report describes the research conducted to complete all Tasks and detals of specific subtasks. <u>https://serdn-estro-storape.3.us.onvwest-1.amazonaus.com/KiSE-public/2024-01FE18-12308/J0FEnal&J0B/J0FE18-12308/J0FEnal&J0B/J0FE18-12308/J0FEnal&J0B/J0FE18-12308/J0FEnal&J0B/J0FE18-12308/J0FEnal&J0B/J0FE18-12308/J0</u>

INTEGRATED ADVANCED MOLECULAR TOOLS PREDICT IN SITU CVOC DEGRADATION RATES: FIELD DEMONSTRATION Kucharzyk, K.H., F.K. Murdoch, J. Wilson, M. Michalsen, F.E. Loffler, R.W. Murdoch, J.D. Istok, P.B. Hatzinger, L. Mullins, and A. Hill. Environmental Science & Technology 58(1):557-559(2024)

Data was collected from COC-contaminated aquifers to assess the potential of biomarker genes (qPCR) and proteins (qProt) measurements to predict degradation rates of cVOCs. At the benchmark study site, the rate constant for degradation of coCE extracted from monitoring data was 11.0 ± 3.4/vr, and the rate constant predicted from the abundance of TecA peptides was 6.9/vr. The rate constant for VC degradation from monitoring data was 8.4 ± 5.7/vr, and the rate constant predicted from the abundance of TecA peptides was 6.9/vr. The rate constant for VC degradation from monitoring data was 8.4 ± 5.7/vr, and the rate constant predicted from the abundance of TecA peptides was 6.9/vr. The rate constant for VC degradation from monitoring data was 8.4 ± 5.7/vr, and the rate constant predicted from the abundance of TecA peptides was 6.9/vr. The rate constant for VC degradation from monitoring data was 8.4 ± 5.7/vr, and the rate constant for COE degradation predicted from qPCR and qProt measurements can be useful to rapidly predict rates of cDCE and VC biodegradation, providing a major adVance in effective site management.

DELINEATION OF A PFOA PLUME AND ASSESSMENT OF DATA GAPS IN ITS CONCEPTUAL MODEL USING PLUMESEEKER¹ OZbek, M., N. Voorhies, L. Howard, R. Swanson, and T. Fox. Groundwater 62(1):445-59(2024)

PlumeSeeker was applied at Lakehurst, the naval component of Joint Base McGuire-Dix-Lakehurst in New Jersey to demonstrate how the cost of delineating the migration pathway of a PFOA plume can be minimized by adding nine new sampling locations and samples from two existing wells to achieve a 70% reduction in plume uncertainty. In addition, using available site data in three different scenarios identified conceptual site model data gaps in the source area and in the interaction between the Manapaqua Branch and groundwater, where the observed high concentration in this area could have resulted from a combination of groundwater milding and induced infiltration.

EVALUATION OF PASSIVE VAPOR DIFFUSION SAMPLERS TO QUANTIFY ACETYLENE, ETHENE, AND ETHANE IN GROUNDWATER Wang, H., R. Yu, D.T. Adamson, R. Iery, and D.L. Freedman. Groundwater Monitoring & Remediation [published online 6 February 2024 before print]

A study compared the quantification of acetylene, ethene, and ethane using passive vapor diffusion (PVD) samplers versus conventional low-flow groundwater collection. Samples were collected from eight to 13 monitoring wells at three sites that show potential for biotic and abiotic TCE degradation in fractured rock aquifers. Method reporting limits (MRLs) for the PVD samplers were 0.25 gpl, for acetylene (0.0094 µM) and 0.28 µgL for theme and ethane (0.0092 µM, respectively); the MRLs for conventional low-flow agroundwater sampling. The detaction of acetylene (the pVD samplers were sole) and 0.0094 µM, and 0.28 µgL for othene and ethane (0.0092 µM, respectively); the MRLs for conventional low-flow agroundwater sampling. The detaction of acetylene (the pVD samplers were sole) and 0.0094 µM, and 0.28 µgL for othene and ethane (0.0092 µM, respectively); the MRLs for conventional low-flow agroundwater sampling. At one site with higher levels of acetylene (maximum of 13 µgL); the concentrations from the PVD samplers were -2 fold higher than those with conventional low-flow agroundwater sampling. Based on robust detection of acetylene, ethene, and/or ethane. TCE degradation is likely occurring at the sites. The use of PVD samplers were sole of PVD samplers were -2 fold higher than those with conventional low-flow agroundwater sampling. Based on robust detection of acetylene, ethene, and/or ethane. TCE degradation is likely occurring at the sites. The use of PVD samplers were sole on the possibility of false negative results and provide another line of evidence to support natural attention.

PREVENTION OF SEDIMENT RECONTAMINATION BY IMPROVED BMPS TO REMOVE ORGANIC AND METAL CONTAMINANTS FROM STORMWATER RUNOFF Luthy, R., Y. Cho, S. Struck, and C. Higgins. SERDP Project ER18-1145, 370 pp, 2022

Luthy, N., 1 Clin, S. Struck, and C. inggins. SLACE Troject Classifier, 370 pp. 2022 This final report focuses on protecting water needing addiment econtamination by developing and showing proof-of-concept for engineered media filters to treat stormwater runoff at DoD facilities. In this study, black carbon (BC), Le, blochar and regenerated activated carbon (RAC), and zeolite amendments were evaluated in engineered media filters to remove disolved metals and trace organic contaminants (TrOCs) such as PCas, PAHs, PPAS, and hydrophile preventing sediments were evaluated in engineered media filters to remove disolved metals and trace organic contaminants. (Aveloping performance curves with kinetic and flow rate design hydrophile performave curves, specific objectives include assessing BC: and zeolite-amended engineered media filters to treat stormwater contaminants (MrCs) such as PCas, PAHs, PPAS, PAS, and hydrophile performance curves with kinetic and flow rate design for inproved stormwater control measures and recommended field demonstration testing for future studies. Results demonstrate that BC: and zeolite-amended engineered media filters successfully remove total suspended solids and a sulte of disolved metal: and organic contaminants while maintaining adequate hydraulic conductivity. Filter design performance tables accounting for media: and contaminants-expected for be governed by hydraulic performance across a range of site and filter design parameters. Long-term modeling demonstrates that BC-amended engineered media filters yave to a systemate across a range of site and filter design parameters. Long-term modeling demonstrates that BC-amended engineered media filters yave to a systemate across a range of site and filter design parameters. Long-term modeling demonstrates that BC-amended engineered media filters yave to a systemate across a range of site and filter design parameters. Long-term modeling demonstrates that BC-amended engineered media filters yave to a systemater across a range of site and fi

REDUCTIVE DEFLUORINATION OF PFAS IN AFFF IMPACTED WATERS Witt, S. I 2023 Great Lakes PFAS Summit, 5-7 December, virtual, 46 minutes, 2023

Micelle-accelerated reductive defluorination is introduced as a novel solution for permanent PFAS destruction. The presentation focuses on technology demonstration in AFFF-impacted waters. Multiple case studies are presented, and scalability and limitations of the technology are discussed.

RELATIONSHIPS BETWEEN PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) AND PHYSICAL-CHEMICAL PARAMETERS IN AQUEOUS LANDFILL SAMPLES Zhang, H., Y. Chen, Y. Liu, J.A. Bowden, T.M. Tolaymat, T.G. Townsend, and H.M. Solo-Gabriele. Chemosphere 329:138541(2023)

A study evaluated the relationships between physical-chemical properties (bulk measurements, oxygen demand components, and metals) and PFAS concentrations in different types of aqueous landfill samples collected from 39 landfill facilities in Florida. The samples included leachates from landfills that receive different waste types, such as municipal solid waste incineration ash, construction and demolition debris, and municipal solid waste. Additional aqueous landfill samples were sourced from treated landfill landerate, gas condensate, stormwater, and groundwater from within and near the landfill boundaries. Results showed significant correlations ($_{5} = 0.79$) for all leachate types. Other physical-chemical parameters significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) tetween and administory ($_{7} = 0.78$), and ammonia ($_{5} = 0.79$) for all leachate types. Other physical-chemical parameters significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significant correlations ($_{7} < 0.84$), and ammonia ($_{5} = 0.79$) for all leachate types. Other physical-chemical parameters significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significantly correlated ($_{7} > 0.60$, $_{7} < 0.05$) with PFAS were significantly correlated ($_{7} > 0.60$) were PFAS levels and a minimal correlation between PFAS and physical-chemical parameters and their correlations with decay text were significant correlations within a leachate type.

EVALUATION OF STRATEGIES TO REMEDIATE MIXED WASTES AT AN INDUSTRIAL SITE IN BRAZIL Barreto, P., M. Lemes, J. Jimenez, E.E. Mack, J. Henderson, and D.L. Freedman. Groundwater Monitoring & Remediation 43(3):93-107(2023)

A study evaluated remediation strategies, including aerobic biodegradation and chemical reduction and oxidation at an industrial site in Brazil contaminated with at least 26 chemicals, six of which are present in the ppm range: chloroberzene (CB), 1,2-dichloroberzene (1,2-DCB), 4-nitrotoluene (4-NT), 2,6-dinitrotoluene (2,6-DNT), 4-soproplaniline (4-IPA), and 1,2-dichlorobethane (1,2-DCA). Other chemicals of concern include 2,4-dinitrotoluene (2,4-dinitrotoluene (2,6-DNT), 4-soproplaniline (4-IPA), and 1,2-dichlorobethane (1,2-DCB). Other chemicals of concern include 2,4-dinitrotoluene (2,4-dinitrotoluene (2,6-DNT), 4-soproplaniline (4-IPA), and 1,2-dichlorobethane (1,2-DCB). Other chemicals of concern include 2,4-dinitrotoluene (2,6-DNT), 2- and -antrotoluene (3,6-DNT), and 4-NT were readily reduced to amino-toluenes under anaerobic conditions by microbes with lactate as the electron donor or using zero-valent iron. Amino-toluenes were amenable to chemical oxidation and/or aerobic biodegradation. This approach was the most effective in a continuous flow column experiment using site soil. Batch tests with mixtures of contaminants and groundwater exposed to chemical oxidation reversione inhibitor effects. While these mixtures may slow the biodegradation strategy that incorporates aerobic biodegradation. Strategy that incorporates aerobic and anaerobic conditional/or and/or chemical oxidation reversione inhibitor effects. While these mixtures may slow the biodegradation strategy that incorporates aerobic and anaerobic biodegradation.

PER- AND POLYFLUOROALKYL SUBSTANCES AND MERCURY IN ARCTIC ALASKA COASTAL FISH OF SUBSISTENCE IMPORTANCE Fraley, X.M., C.R. Hamman, T.M. Sutton, M.D. Robards, T. Jones, and A. Whiting. Environmental Toxicology & Chemistry 42(11):2329-2335(2023)

Fish species of subsistence and recreational importance were collected from nearshore Beaufort and Chukchi Sea, Alaska habitats and assessed for PFAS and total mercury concentrations [Thg]. Multiple PFAS compounds were present at low levels (<3µg/kg) in the muscle lissue of incomu, broad whitefish, Dolly Vaden char, Arctic flounder, saffon cod, humpback whitefish, and least ciscu. in addition, [Thg] levels in these fish were well below levels triggering local fish consumption guidelines (<170µg/kg). Initial results indicate no evidence of the Alaska Arctic nearshore fish species examined as an avenue of PFAS of Hg exposure to people who harves them. The sources and trends of three contaminants in the Arctic require Unther investigation.

EVALUATION OF THE IMPACT OF TRANSITION FROM POROUS TO FRACTURED ROCK MEDIA ON 3D FIELD-SCALE DNAPLS CONTAMINATION Kim, T., W.S. Han, S. Yoon, P.K. Kang, J. Shin, and M.J. Nam. Journal of Hazardous Materials 462:132711(2024)

A study developed a 3D high-resolution subsurface characteristic (HSC) numerical model to assess the migration and distribution of subsurface DNAPL. Diverse field data were utilized for realistic model representation, including lithologic, hydrogeologic, petrophysical, and fracture information from both in situ observations and lab experiments. The model integrates hydrogeologic characteristics of both porous (unconsolidated soil [US] and weathered rock (WR]) and the returne of the media, simulateneously. In the 3D HSC model, hypothetical 100-year DNAPL contamination was simulated, quantitatively analyzing its spatiotemporal distributions by momentum analyses. Twelve sensitivity scenarios examined the impact of VR and FR characteristics on DNAPL face, supravised in the ZHSC model hypothetical 100-year DNAPLS contamination was simulated, quantitatively analyzing its spatiotemporal distributions by momentum analyses. Twelve sensitivity scenarios examined the impact of VR and FR characteristics on DNAPL face, supravised of VR. DNAPL face, supravised in VR ANAPL face, supravised in VR ANAPL face, supravised in VR ANAPL face, supravised of VR AnaPL face, supravised of VR AnaPL face, supravised of PR characteristics, including rock, matrix permeability and indiverse vertices and fracture + rock mean prossity. This study first attempted to apply the field-data-based multiple geological media concept in the DNAPL face, supravised of RC anarcteristics of VR. The effect of VR and the field-data-based multiple geological media concept in the DNAPL face. Supravised of RC anarcteristics of RC anarcteristics

NOVEL RESEARCH ON PFAS ADSORPTIVE TECHNOLOGIES Punnell, K., M. Vanderkooy, and A. Pham. SERDP & ESTCP Webinar Series, February 2024

This webinar features DoD-funded research efforts to develop adsorptive technologies for PFAS removal. The first presentation discusses the development of a polymer-stabilized powdered activated carbon and a polymer-stabilized ion exchange resin for use as injectable particulate amendments for PFAS adsorption in situ. The second presentation features research on in situ PFAS immobilization via activated carbon barriers.

LINES OF EVIDENCE FOR EVALUATING LNAPL AND DISSOLVED.PHASE PLUME-STABILITY AT PETROLEUM SITES Johnson, W. I AEHS 39th Annual International Conference on Soils, Sediments, Water and Energy, 16-19 October, Amherst, MA, 19 slides, 2023

This presentation highlights the application of HRSC tools and methods to evaluate LNAPL and dissolved-phase plume stability, exposure, and site closure within the expanding science of plume stability and exposure characterization. The presentation also outlines evolving, multi-discipline techniques to characterize to characterize to LNAPL bodies and dissolved-phase groundwater plumes, with an emphasis on the application of HRSC tools. Source material includes references to pervisusly published/presented concepts and data sets focus on the role of HRSC. Case studies and references to existing LNAPE judices constrained to evaluate source-area toxicity, plume stability, and exposure for pervisusly audi-information and low-risks title colorum. Combining HRSC natural mass removal data to evaluate source-area toxicity, plume stability, and exposure for pervisusly and references to existing and references

THE SHIFTING RESEARCH LANDSCAPE FOR PAH BIOREMEDIATION IN WATER ENVIRONMENT: A BIBLIOMETRIC ANALYSIS ON THREE DECADES OF DEVELOPMENT

Xia, M., B. Chen, G. Fan, S. Weng, R. Qiu, Z. Hong, and Z. Yan. Environmental Science and Pollution Research 30:69711-69726(2023)

A bibliometric analysis on the three-decade (1990-2022) development of PAH bioremediation in the vager environment was conducted from temporal and spatial dimensions using CleSpece. A total of 2,480 publications were obtained from the Web of Solution of Abbabasets to Upport tets basis: Constantic Partice Instantian and and the U.S. were the major contributors in the research area, while at the institutional level, the Chinese Academy of Sciences produced the most research results. However, international cooperation across regions was lacking in the field. Environment Science and Technology, Chemosphere, Applied and Environment Microbiology, Journal of Hazerdous Areadomy of Sciences produced the most research results. However, international accords regions was alkaling in the field. Environment Science and Technology, Chemosphere, Applied and Environment Microbiology, Journal of Hazerdous Materials, and Environment Pollution were the tive most cited journals. The field has experienced three major statiges, each with distinct research hotspots, including the initial stage (1990-1994), mechanism investigation (1995-2000), and application exploration (2001-2010; 2011-2022). Finally, research prespectives were protected, covering bioavaliability, immonitization, and valie but nonculturable bacteria.

LONG TERM GROUND WATER MONITORING USING LSTM ALGORITHM FOR ANOMALY DETECTION Soni, J. I The Remplex Virtual Global Summit, 14-16 November, 21 slides, 2023

Cont. or the templex initial local dumin, the totel relations of above the detection model, leveraging the capabilities of Long Short-Term Memory (LSTM) models. The proposed LSTM-based approach enables the detection of anomalies sensor readings, allowing for the early identification of above main contamination levels in various analytes. By training the LSTM model on historical data of normal sensor readings, it learns the patterns and regularities inherent in the groundwater contamination data. Subsequently in the model evaluates real-time sensor readings, allowing for the early identification of above main contamination levels in various analytes. By training the LSTM model on historical data of normal sensor readings, it learns the patterns and regularities inherent in the groundwater contamination data. Subsequently in the solitivity capatities real-time sensor readings, the LSTM model can effectively differentiate between normal variations and true anomalies, enabling proactive intervention and mitigation measures. Successful implementation of the proposed LSTM-based anomaly detection model will provide groundwater contaminated sites with a reliable to fold continuous monitoring of groundwater contamination. The timely detection of anomalies can facilitate pompt response and remedial actions, minimizing the potential spread of contamination. The intervention and mitigation measures. Successful implementation of the proposed LSTM-based anomaly detection of anomalies can facilitate pompt response and remedial actions, minimizing the potential spread of contamination. The timely detection of anomalies of anomalies of advection of anomalies of advection of anomalies can facilitate pompt response and remedial actions, minimizing the potential spread of contamination. The timely detection of anomalies can facilitate pompt response and remedial actions, minimizing the potential spread of contamination. The minimation and mitigation measures. Successful infinters (SUSA) SUSA) SUSA) SUSA (SUSA) SUSA (SUSA) SUSA) SU

USING HIGH RESOLUTION MASS SPECTROMETRY FOR ENVIRONMENTAL FORENSICS FOR NEW AND EMERGING PFAS FROM INDUSTRIAL PRODUCTION AND USE SITES Strynar, M., J. McCord, AND J. Bangma. Los Angeles Metropolitan Mass Spectrometry (LAMMS) Meeting, virtual, 67 minutes, 2024

This slide presentation describes tools used from published literature along with case studies demonstrating findings using non-targeted analysis (NTA) techniques for the discovery of novel PFAS compounds. In addition, some treatment of limitations of these approaches and thought of future remaining obstacles are addressed. Recently, NTA for the discovery of novel PFAS in environmental and biological media has been shown to be valuable in multiple applications. Classical targeted analysis of PFAS using IC-MS/MS is still lacking in a more holistic understanding of the PFAS burden in most samples, and NTA fills at least a portion of this data gaps. This is demonstrated through a series of tell-tale PFAS characteristics, including characteristic mass defect range, homologous series, characteristic fragmentation patterns, and case studies. This compilation of resources will help with the entry and advancement of the science.

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 a dam michael@ea.opu or (703) 603-99115 with any comments, suggestions, or corrections. Mention of non-EPA documents, presentations, or papers does not constitute a U.S. EPA endorsement of their contents, only an acknowledgment that they exist and may be relevant to the Technology Innovation News Survey audience.