Technology Innovation News Survey

Entries for April 16-30, 2014

Market/Commercialization Information

TREATMENT, CONTROL, AND MONITORING OF REMEDIATION TECHNOLOGIES
U.S. Environmental Protection Agency, Office of Acquisition Management, Cincinnati, OH.
Federal Business Opportunities, FBO-4557, Solicitation SOL-CI-14-00019, 2014

EPA is performing a market search for businesses in preparation for a future procurement under NAICS code 541712. EPA reserves the right to set this action aside for small businesses. EPA's Office of Research and Development (ORD), has a need for a firm to support ORD by providing technical and analytical services in the conduct of research, development, and evaluation studies. A contractor interested in submitting a capabilities statement in regard to this effort should specifically address section 4 of the draft performance work statement, which can be located via the search interface at FedConnect.net. Depending on EPA's needs, the contractor will provide support within the EPA Cincinnati-area facilities, other facilities, or field sites. Capabilities statements in response to this sources-sought must be submitted through https://www.fedconnect.net/ by June 18, 2014. It is anticipated that any future contract for these services will be a cost-plus-fixed-fee, level-of-effort type contract with five one-year option periods, each with LOE of ~170,000 hours.
https://www.fbo.gov/spg/EPA/OAM/OH/SOL-CI-14-00019/listing.html

INDEFINITE DELIVERY/QUANTITY CONTRACT FOR ENVIRONMENTAL SERVICES WITHIN THE GEOGRAPHIC LIMITS OF THE MISSISSIPPI VALLEY DIVISION
U.S. Army Corps of Engineers, USACE District St. Louis, MO.
Federal Business Opportunities, FBO-4557, Solicitation W912P914R0727, 2014

The anticipated work will consist of a variety of environmental tasks, including analysis of data derived from environmental studies; hazardous, toxic and radioactive waste studies; industrial hygiene and health physics studies; environmental assessments; emergency response; research and development; special study projects; remote instrumentation; and other related environmental work. Award will be a firm-fixed-price contract with a base year and four option periods resulting from a competitive negotiated RFP. The award decision will be based on technical expertise, past performance, experience, and cost factors. Contract value is not to exceed $2M per contract year. The RFP will be available on or about May 30, 2014, and is set aside for small business concerns.
https://www.fbo.gov/notices/3390c87b6d2376a16c23ecda66527a44

NATIONAL DEFENSE CENTER FOR ENERGY AND ENVIRONMENT: INDUSTRY DAY BRIEFING SLIDES
Army Contracting Command, Aberdeen Proving Ground, MD.
Federal Business Opportunities, FBO-4556, W91ZLK14RNDCE, 2014

The briefing slides presented at the National Defense Center for Energy and Environment (NDCEE) Industry Day, which was held May 7, 2014, at Aberdeen Proving Ground, Maryland, have been posted along with the attendance list at https://acquisition.army.mil/asfi/synopsis_attach_viewer.cfm?psolicitationnbr=W91ZLK14RNDCE&pseqnbr=453356&pnot_type=SNOTE. The NDCEE Industry Day was unclassified and open to all interested contractors, large and small businesses, and academia as well as other government stakeholders. https://www.fbo.gov/notices/b616a32625e6a403b926feeda8546910

COOPERATIVE AGREEMENT FOR RESEARCH AND PROGRAM ASSISTANCE AT DOD INSTALLATIONS SUPPORTED BY THE KANSAS CITY DISTRICT
U.S. Army Corps of Engineers (USACE), Funding Opportunity NWK-14-0001, 2014

The USACE Kansas City District intends to enter into a broad Cooperative Agreement with qualified nonprofit educational institution(s) or universities for a 5-year period of performance to (1) collect, analyze, and apply environmental and cultural resource data and (2) implement land rehabilitation, environmental remediation support, and maintenance for optimal management of military lands under DoD control in the Kansas City District. USACE anticipates one award with an estimated $15M in total program funding. The closing date for applications is June 13, 2014. http://www.grants.gov/web/grants/view-opportunity.html?oppId=255059

LEAD-BASED PAINT HAZARD CONTROL (LBPHC) GRANT PROGRAM AND LEAD HAZARD REDUCTION DEMONSTRATION (LHRD) GRANT PROGRAM
Department of Housing and Urban Development, Funding Opportunity FR-5800-N-04, 2014

The overarching purpose of the Lead-Based Paint Hazard Control Grant Program and the Lead Hazard Reduction Demonstration Grant Program is to assist states, cities, counties/parishes, Native American tribes, or other units of local government in undertaking comprehensive programs to identify and control lead-based paint hazards in eligible privately owned rental or owner-occupied housing, targeting urban jurisdictions with the greatest lead-based paint hazard control needs. HUD anticipates funding of $104M total for the combined programs for up to 30 awards ranging from $1M to $3.9M. Electronically submitted applications are due no later than 11:59:59 pm ET, June 27, 2014. http://www.grants.gov/web/grants/view-opportunity.html?oppId=255179

HTRW (IDA-E) ALEUTIAN ISLANDS AK
U.S. Army Corps of Engineers, USACE District, Alaska, Elmendorf AFB, AK.
Federal Business Opportunities, FBO-4563, Solicitation W911KB-14-R-0041-IDAE, 2014

The USACE District, Alaska, has issued a combined synopsis/solicitation for support services for the Corps' Formerly Used Defense Site hazardous, toxic, and radiological wastes (HTRW) program as a total small business set-aside, NAICS code 541330. SF 330 submittals must be received no later than 2:00 pm Alaska time on June 16, 2014. One IDA-E contract will be awarded as indefinite delivery with a contract limit of $10M over five years. The contract award is anticipated for the 4th quarter of FY 2014. The Corps' Formerly Used Defense Site HTRW program covers investigation, planning, and design for cleanup of HTRW, debris, and other environmental contaminants at various locations in Alaska. See the notice at FBO.gov for additional information on this procurement.
https://www.fbo.gov/spg/USA/COE/DACA85/W911KB-14-R-0041-IDAE/listing.html

Cleanup News

FARMERS ELEVATOR COMPANY, SYLVAN GROVE SITE: STATE COOPERATIVE AGENCY DECISION STATEMENT
Kansas Dept. of Heath and Environment (KDHE), 10 pp, 2013

Since before 1901, The Farmer Elevator Company site in Sylvan Grove, Kansas, has been the location of multiple grain elevators. In 2008, nitrate and ammonia exceeded the nitrate guideline in soil throughout the site, and KDHE identified nitrate in the groundwater above the maximum contaminant level of 10 mg/L. KDHE, Kansas State University (KSU), and the landowners have engaged in a unique partnership to investigate and remediate the residual contamination. KSU geology and agronomy students enrolled in a science Capstone course were given the opportunity to plan and perform a site investigation and design a corrective action. KDHE provided project oversight and technical guidance and will also oversee execution of the corrective action. Over two semesters, Capstone students

conducted an investigation, evaluated cleanup options, and wrote a report describing the preferred remedial action. KDHE approved the report in April 2013. KSU students will implement the corrective action, which includes excavating the most highly contaminated soil, followed by phytoremediation through planting hardy, nitrogen-loving plants such as native grasses and cottonwood trees.
http://www.kdheks.gov/remedial/site_restoration/farmers_sylvangrove.html

LCP CHEMICALS, INC. SUPERFUND SITE, LINDEN, UNION COUNTY, NEW JERSEY: RECORD OF DECISION

U.S. EPA Region 2, 128 pp, Feb 2014

Visible amounts of mercury contaminate the 26-acre site of a former chlor-alkali plant. A capping system will be installed both to prevent direct contact with soils on a site-wide basis and to interrupt the potential for inhalation exposure to mercury vapor. In addition to a soil layer, the cap will have a layer of sulfur beneath a geosynthetic membrane. The sulfur will convert the mercury into insoluble mercuric sulfide (i.e., cinnabar), and the membrane will further suppress mercury vapor and keep rainwater from getting into the underlying groundwater. Buildings on site will be demolished. Porous building material that has visible signs of contamination will be vacuumed and treated with sulfur. Areas with visible mercury will be treated by mixing the contaminated soil with sulfur to a depth of ~15 ft. In the nearby stream, the most highly contaminated sediment will be dug up and moved upstream, where it will be capped. The excavated area and a nearby ditch will be restored with clean sediment, and the wetlands will be reconstructed. Contaminated groundwater from the site will be extracted and treated, and a barrier will be installed to contain the contaminated groundwater. Future construction will be restricted to commercial use. http://www.epa.gov/Region2/superfund/npl/lcpchemicals/pdf/lcp_rod_final_.pdf
See also the site feasibility study: http://www.epa.gov/Region2/superfund/npl/lcpchemicals/pdf/feasibilitystudy.pdf

Demonstrations / Feasibility Studies

USE OF COMPOUND-SPECIFIC STABLE ISOTOPE ANALYSIS TO DISTINGUISH BETWEEN VAPOR INTRUSION AND INDOOR SOURCES OF VOC: ESTCP COST AND PERFORMANCE REPORT

ESTCP Report ER-201025-C&P, 48 pp, Dec 2013

The overall goal of this demonstration was to validate the use of compound-specific stable isotope analysis (CSIA) to distinguish between vapor intrusion and indoor sources of VOC. As part of this project, a step-by-step protocol has been developed, which can be used to provide an independent line of evidence to determine whether or not buildings are impacted by vapor intrusion. The CSIA protocol was demonstrated at four DoD sites alongside investigations using conventional vapor intrusion and on-site gas chromatography/mass spectrometry analysis. This report discusses the advantages and limitations of the CSIA protocol.
http://www.serdp-estcp.org/content/download/25694/261856/file/ER-201025-CP.pdf

USE OF ON-SITE GC/MS ANALYSIS TO DISTINGUISH BETWEEN VAPOR INTRUSION AND INDOOR SOURCES OF VOC: ESTCP COST AND PERFORMANCE REPORT

ESTCP Report ER-201119-C&P, 50 pp, Dec 2013

A field investigation program was conducted at four DoD sites to develop and validate a step-wise investigation procedure using commercially available off-the-shelf on-site chromatography/mass spectrometry analysis with real-time decision-making as a tool to distinguish between vapor intrusion and indoor sources of VOC. Results from three investigation methods—HAPSITE portable GC/MS, compound-specific stable isotope analysis, and conventional vapor intrusion techniques—were compared to evaluate the relative effectiveness of the different approaches. http://www.serdp-estcp.org/content/download/25999/263904/file/ER-201119-CP.pdf

DETERMINING SOURCE ATTENUATION HISTORY TO SUPPORT CLOSURE BY NATURAL ATTENUATION: ESTCP COST AND PERFORMANCE REPORT

ESTCP Report ER-201032-C&P, 78 pp, 2013

The project developed a simple transport-based spreadsheet tool—the Source History Tool—to generate source history estimates from high-resolution soil core data. The basis for the modeling approach for this project was the 1-D diffusion equation using Fick's second law. This law defines the diffusion of a chemical in solution in response to a concentration gradient. The analytical solution allows for the concentration at any depth to be determined based on the concentration at the interface. Results were compared to prior source history reconstructions based on detailed numerical modeling. The Source History Tool calculates the concentrations at the high-k/low-k interface over time that would best represent the vertical concentration profile measured in the soil cores. It develops this pattern by systematically adjusting the interface concentration at various time intervals until a representative "best" fit is obtained. To validate the tool, data were collected from two different source areas located at Naval Air Station Jacksonville.
http://www.serdp-estcp.org/content/download/25299/259164/file/ER-201032-CP.pdf

DEMONSTRATION OF THE AGI UNIVERSAL SAMPLERS (F.K.A. THE GORE® MODULES) FOR PASSIVE SAMPLING OF GROUNDWATER

Parker, L., T. Hall, R. Bailey, K. Gagnon, G. Gooch, R. Willey, T. McHale, and W. Major.
ERDC/CRREL TR-14-4, ESTCP Project ER-200921, 250 pp, 2014

The GORE Module is a passive sampler that was developed to sample air and water for a variety of VOCs and SVOCs. The sampler is now known as the AGI Universal Sampler following its acquisition by another company. The objectives of ESTCP Project ER-200921 were to determine if the GORE Modules used for sampling groundwater can provide (1) technically defensible analytical data for VOCs and SVOCs and (2) substantial cost savings when compared with U.S. EPA's low-flow purging and sampling method. Sampling was conducted at two sites: the Southern Bush River section of Aberdeen Proving Ground, Maryland, and the former Pease Air Force Base in Portsmouth, New Hampshire. Analytes included chlorinated VOCs and hydrocarbon VOCs and SVOCs. Placement of additional modules allowed an examination of concentration gradients in those wells with depth both before and after low-flow sampling.
http://www.serdp-estcp.org/content/download/25285/259057/file/ER-200921-FR.pdf

A HIGH SURFACE AREA MEDIA TREATMENT TRIAL OF A CIRCUM-NEUTRAL, NET ALKALINE COAL MINE DISCHARGE IN THE SOUTH DERBYSHIRE COAL FIELD (UK) USING HYDROUS FERRIC OXIDE

Moorhouse, A.M.L., L.M. Wyatt, I.A. Watson, and S. Hill.
IMWA 2013: Reliable Mine Water Technology. International Mine Water Association, 667-673, 2014

In 2010, a pilot study using high surface area media in the form of a surface-catalyzed oxidation of ferrous iron (SCOOFI) system was undertaken for 12 months to assess the effectiveness of the medium for removing iron from a net-alkaline, circum-neutral mine water in Leicestershire. A SCOOFI reactor provides a porous plastic medium of very high surface area onto which iron precipitates as ochre (ferric hydroxide). As ochre accumulates, the SCOOFI system requires periodic cleaning to prevent clogging. The three different SCOOFI configurations investigated achieved mean iron area-adjusted removal rates up to 139 $g/m^2/d$, higher than the 10 $g/m^2/d$ quoted in the literature for conventional schemes. Although the pilots successfully removed some iron, the ochre clogged the system quickly, and the unstable nature of the precipitate made it difficult to maintain the scheme.
http://www.imwa.info/docs/imwa_2013/IMWA2013_Moorhouse_356.pdf

EVALUATION OF HIGH-RATE CLARIFICATION FOR WATER TREATMENT AT A URANIUM MINE

Zinchenko, D., P. Schauer, J. Migchelbrink, J.R. Tamburini, H.C. Liang, N. Rolston, M. Nketia, J. Hatley, T. Lau, and J. Willis.
IMWA 2013: Reliable Mine Water Technology. International Mine Water Association, 755-761, 2013

A pilot study of metal removal from uranium mine water was performed to evaluate the effectiveness and applicability of high-rate clarification technology, which currently is applied in both municipal water treatment and stormwater management to treat large

volumes of water in a relatively small footprint. Wastewater from underground processing operations at Cameco's McArthur River uranium mine was pumped to the surface and chemically treated prior to entering the pilot unit, a 22.7 m^3/h DensaDeg® pilot clarifier system made by Infilco Degremont Technologies. Flow rate varied between 18.2-27.3 m^3/h. Two different treatment schemes were analyzed: a high-pH process for removing uranium and a low-pH process for the removal of molybdenum and radium. Performance of the pilot clarification unit was found to be highly dependent on floc properties, polymer addition, and influent consistency. The presence of uranium in the high-pH treatment process created a dense floc that bogged down the mechanical equipment, whereas the low-pH treatment process generated molybdenum and radium sludge that was less dense and caused almost no issues in the clarifier system. Overall, high-rate clarifier systems present some important advantages, but full-scale designs should be based on detailed investigations of the generated sludge's rheology and other site-specific characteristics.
https://www.imwa.info/docs/imwa_2013/IMWA2013_Zinchenko_489.pdf

FORMATION OF A HARDPAN IN THE CO-DISPOSAL OF FLY ASH AND SULFIDE MINE TAILINGS AND ITS INFLUENCE ON THE GENERATION OF ACID MINE DRAINAGE

Quispe, D., R. Perez-Lopez, P. Acero, C. Ayora, J.M. Nieto, and R. Tucoulou.
Chemical Geology, Vol 355, 45-55, 2013

In field pilots conducted to test a strategy for the treatment of acid mine drainage by addition of an alkaline cover of coal combustion fly ash on two sulfide mine tailings impoundments, calcium-rich alkaline solutions from the fly ash interacted with metal-rich acidic solutions from mine tailings, leading to the massive precipitation of newly formed phases mainly in the fly ash close to the interface between both materials. The interaction between fly ash and pyrite sludge over time promoted the formation of a chemically cemented zone or hardpan. Analysis identified the poorly crystalline Fe oxyhydroxysulfates jarosite and gypsum as newly formed phases in the hardpan and gypsum in the fly ash. These phases seem to exert a significant mineralogical control on element mobility: jarosite showed high affinity for As, while poorly crystalline Fe-rich assemblages selectively concentrated Mn, Ni, and Pb. The fly ash cover reduced the bioavailability of most of the elements by modifying their chemical speciation into less mobile forms under typical oxidizing conditions. The development of the hardpan also hindered the penetration of oxidizing agents to sulfide mine tailings, which significantly reduced the sulfide oxidation rates, thus limiting the release of elements to the environment. *For the text of this paper, see* ***PDF pages 89-115*** *in D. Quispe's 2013 Ph.D. thesis*: http://dspace.unia.es/bitstream/handle/10334/2627/0526_Quispe.pdf?sequence=1.

Research

PRECONCENTRATION FOR IMPROVED LONG-TERM MONITORING OF CONTAMINANTS IN GROUNDWATER

White, B.J. and B.J. Melde.
SERDP Report ER-1604, 143 pp, 2014

Materials for the concentration of nitroenergetic and perchlorate targets from groundwater in monitoring applications were developed using novel molecular imprinting and structure direction techniques. The potential for concentration of targets from ground and surface waters as well as from soil extracts was demonstrated, and the functional characteristics of the materials were evaluated to determine the constraints on their use in inline preconcentration of targets ahead of ion mobility spectrometry and electrochemical sensing techniques. The systems subsequently were developed at the bench level, and function was evaluated using commercially available portable sensors. An initial portable prototype was also developed and evaluated under a field scenario.
http://www.serdp-estcp.org/content/download/25791/262561/file/ER-1604%20final%20report-Org%20cleared.pdf

SUMMARY REVIEW OF THE AQUATIC TOXICOLOGY OF MUNITIONS CONSTITUENTS

Lotufo, G.R., G. Rosen, W. Wild, and G. Carton.
ERDC/EL TR-13-8, 124 pp, 2013

This report provides a review of the aquatic ecotoxicology of the following munitions constituents—nitroaromatics (TNT, dinitrotoluenes, 1,3,5-trinitrobenzene, tetryl, and picric acid); nitrate esters (nitrocellulose, PETN, nitroglycerine); and nitramines (RDX and HMX)—in the marine environment. Most marine constituents observed in this study rapidly degraded in aqueous exposure systems, and nitroaromatics showed a significant binding affinity with organic matter. In general, nitramines were less toxic than nitroaromatics, with a wide range of sensitivity among species.http://el.erdc.usace.army.mil/elpubs/pdf/trel13-8.pdf

MODELING RDX REDUCTION WITHIN IRON BED REACTORS

Dortch, M.S. and H.M. Smith.
ERDC TN-EQT-13-1, 19 pp, 2013

Iron has been used to reduce organic contaminants, including high explosives such as RDX. Work is ongoing at the U.S. Army Engineer Research and Development Center to develop guidelines for using iron bed reactors to remove RDX in surface water runoff from the impact areas of firing ranges. As part of this work, a mathematical model was developed to gain a better understanding of the experimental results and to provide information for design and operation of these reactors. The model and its application results are described within this technical note. Following additional validation against field data, the model will be implemented within the Training Range Environmental Evaluation and Characterization System (TREECS™), which is designed to forecast the fate of munitions constituents (e.g., metals) within and transported from firing/training ranges to surface water and groundwater.
http://el.erdc.usace.army.mil/elpubs/pdf/eqt-13-1.pdf

USE OF ECOLOGICAL RISK ASSESSMENT TO GUIDE REMEDIATION AT THE TECK PINCHI LAKE MERCURY MINE

Allard, P., R. Baker, and C. Mackintosh.
British Columbia Mine Reclamation Symposium 2013, 13 pp, 2013

Metallic mercury was extracted from cinnabar ore at the Pinchi Mine from 1940 to 1944 (historic) and from 1968 to 1975 (modern). Waste materials from both operations remain on site, within the lake, in a tailings facility, and at other discrete locations. From 2004-2009 a terrestrial ecological risk assessment was undertaken based on literature, field investigations, habitat surveys, spatially explicit food chain modeling, and development of toxicity reference values for methylmercury and other metals. Ecological risks were evaluated for 40 wildlife species. Only those species feeding primarily on insects or small mammals indicated potential risks, mainly from arsenic, inorganic mercury, and methylmercury from the mill site and tailings facility. A post-closure risk-reduction analysis indicated that remediation of these areas would reduce risks to wildlife to levels acceptable to risk managers. Other areas with elevated inorganic mercury in soils were deemed to pose negligible to moderate risk and were not targeted for remediation, based on a weighted evaluation of potential risks to wildlife from contamination versus disturbance to naturally recovering habitat.
https://circle.ubc.ca/handle/2429/45276

CHARACTERIZATION AND PREDICTION OF TRACE METAL-BEARING PHASES IN ARD NEUTRALIZATION SLUDGES

Martin, A., D. Loomer, S. Fawcett, A. Rollo, A. Gault, H. Jamieson, S. Simpson, and T. Al.
Natural Resources Canada, Mine Environmental Neutral Drainage Program, MEND Report 3.44.1, 143 pp, 2013

To provide insight into the solid-phase characterization of neutralization sludges, high-density sludge materials from seven mine sites across Canada were examined by high-resolution microscopy techniques in combination with influent and effluent characterization. The primary objectives of the study were to: 1) define the nature of metal phase associations in sludge materials; 2) define the links between ARD influent/effluent chemistry, treatment process, and sludge composition; and 3) provide a basis from which to develop a sludge management framework from the perspective of long-term chemical stability.

http://mend-nedem.org/wp-content/uploads/Report_3.44.1.pdf

MODELLING THE CRITICAL INTERACTIONS BETWEEN COVER SYSTEMS AND VEGETATION
Natural Resources Canada, Mine Environmental Neutral Drainage Program, MEND Report 2.21.6, 66 pp, 2014

This report summarizes physical, physiological, and ecological properties of vegetation relevant to cover system design to help users determine the preferred approach for numerical simulation of vegetation in cover system design. A summarized compilation of current modeling codes and their deficiencies is followed by examples of how models that accurately capture plant processes are formulated. Recommendations and conclusions are included. http://mend-nedem.org/wp-content/uploads/2.21.6.pdf

IN SITU IMMOBILIZATION OF SELENIUM WITHIN THE SATURATED ZONES OF BACKFILLED PITS AT COAL-MINE OPERATIONS
Bianchin, M., A. Martin, and J. Adams.
British Columbia Mine Reclamation Symposium 2013, 16 pp, 2013

The chemical and hydraulic conditions of backfilled pits offer a potential means to bioremediate large volumes of water passively. Specifically, the oxidation demand associated with carbonaceous waste materials in conjunction with long water residence times within backfilled pits can produce the suboxic conditions required to support the removal of Se from solution through a suite of microbially mediated processes. The data suggest that this small backfilled pit achieves a Se removal rate ranging from 0.03 to 0.3 mg/day/m^3 waste rock with a hydraulic residence time of 0.3 to 3 years. https://circle.ubc.ca/handle/2429/45284

SEASONALITY OF IRON REMOVAL WITHIN THE INITIAL OXIDATION CELL OF A PASSIVE TREATMENT SYSTEM
Oxenford, L.R. and R.W. Nairn.
2013 National Meeting of the American Society of Mining and Reclamation, June 1-6, 2013, Laramie, Wyoming. R.I. Barnhisel (ed). ASMR, Lexington, KY. Abstract and 24 slides, 2013

A study was conducted to investigate iron removal in an oxidation cell pond with increasing distance and depth from influent acid mine drainage (AMD) with respect to seasonality at the Tar Creek Superfund Site, Oklahoma. From 2009-2012, progressive iron removal profiles were constructed from seasonal (January, April, July, and October) sample measurements for 10 locations with increasing distance from the AMD source and at three water depths for a 0.4-ha U-shaped oxidation pond receiving ferruginous lead-zinc mine drainage. Within the first year of operation, iron removal rates within the oxidation pond averaged ~80% (measured at effluent), yet ranged from a maximum of 96% (Apr 2010) to 43% (Jan 2010) seasonally. The implications of variability in seasonal iron removal profiles with respect to reporting oxidation cell performance in association with short-term (per sampling event) and long-term passive treatment system operation can influence management decisions significantly. *PowerPoint presentation*:
http://www.asmr.us/Meetings/2013/PowerPoint%20files/Mon%20PM%20Salon%20FG/2-30%20Mon%20Oxenford%20Salon%20FG.ppt

CONDUCTIVE MAGNETITE NANOPARTICLES ACCELERATE THE MICROBIAL REDUCTIVE DECHLORINATION OF TRICHLOROETHENE BY PROMOTING INTERSPECIES ELECTRON TRANSFER PROCESSES
Aulenta, F., Rossetti, S., Amalfitano, S., Majone, M. and Tandoi, V.
ChemSusChem, Vol 6 No 3, pages 433-436, Mar 2013

Conductive magnetite nanoparticles accelerate the microbial reductive dechlorination of TCE, a ubiquitous and toxic subsurface contaminant. The stimulatory effect most likely results from the nanoparticles promoting the establishment of interspecies electron transfer processes between non-dechlorinating and dechlorinating microorganisms.
http://aulentalab.webplus.net/ChemSusChem%206(3)%20433-436%20with%20SI.pdf

General News

ENHANCED KNOWLEDGE IN MERCURY FATE AND TRANSPORT FOR IMPROVED MANAGEMENT OF HG SOIL CONTAMINATION
SNOWMAN Network, Project No. SN-03/08, 2014

The IMaHg project provides recommendations and highlights needs areas for improving the management of mercury-contaminated sites. Recommendations and needs were established based on enhanced understanding of mercury species fate, transport, and modeling in the vadose zone and on comparison of current practices for characterization, assessment, and remediation of mercury contamination. The following reports are posted as part of the project output:

- Literature Review on Mercury Speciation Soil Systems under Oxidizing Conditions (IMaHg - D2.1, 2013).
- Mercury Fate and Transport in Soil Systems: Conceptual and Mathematical Model Development and Sensitivity Study (IMaHg - D2.2-D2.3, 2013).
- Characterisation of Mercury Contaminates Sites (IMaHG - D3.1, 2014).
- Risk Assessment of Mercury Contaminated Sites (IMaHg - D3.2, 2014).
- Remediation of Mercury Contaminated Sites (IMaHg - D4.1, 2014).

See these and other reports at http://www.snowmannetwork.com/main.asp?id=320.

GROUNDWATER REMEDY COMPLETION STRATEGY: MOVING FORWARD WITH THE END IN MIND
U.S. EPA, Office of Solid Waste and Emergency Response.
OSWER Directive 9200.2-144, 28 pp, 2014

The purpose of this document is to help focus resources on the information and decisions needed to complete groundwater remedies effectively and ensure that the remedies protect human health and the environment. This guidance presents a recommended process for evaluating Superfund groundwater remedy performance and making decisions to help facilitate achievement of remedial action objectives and associated cleanup levels.
http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/EPA_Groundwater_Remedy_Completion.pdf

CLIMATE CHANGE ADAPTATION TECHNICAL FACT SHEET: GROUNDWATER REMEDIATION SYSTEMS
U.S. EPA, Office of Superfund Remediation and Technology Innovation.
EPA 542-F-13-004, 8 pp, 2013

A key component of the preliminary Superfund climate change adaptation action plan involves developing tools that can help project managers and other cleanup stakeholders identify, prioritize, and implement site-specific measures for increasing remedy resilience to climate change impacts. This fact sheet, the first in a series, addresses remedies involving groundwater remediation systems. It is intended to serve as an adaptation planning tool by (1) providing an overview of potential climate change vulnerabilities and (2) presenting possible adaptation measures that can be considered to increase a remedy's resilience to climate change impacts. Concepts addressed in this tool can also apply to site cleanups conducted under other regulatory programs or through voluntary efforts.
http://www.epa.gov/superfund/climatechange/cca-tech-fact-sheet-gw-remediation-systems.pdf

EREM 2013: INTERNATIONAL SYMPOSIUM ON ELECTROKINETIC REMEDIATION, NORTHEASTERN UNIVERSITY, BOSTON, MA, JUNE 23-26,

2013: PROGRAM WITH ABSTRACTS
Notheastern University, 88 pp, 2013

Electrokinetic and electrochemical processes provide valuable and versatile tools to manage and remediate contaminated materials. Significant progress continues to be made in these techniques, and the annual international EREM symposium provides a venue to present and discuss recent developments in electrokinetic and electrochemical remediation.
http://nuweb9.neu.edu/erem2013/wp-content/uploads/2013/07/EREM2013_Final_Web.pdf

UST COMMON COMPLIANCE VIOLATIONS REPORT: FY 2012
ASTSWMO UST Task Force, Tanks Subcommittee.
Association of State and Territorial Solid Waste Management Officials, 16 pp, 2014

The UST task force solicited information from all the states in an effort to determine which violations are most often encountered during underground storage tank compliance inspections and other verification activities. This report provides a national perspective with regard to which UST violations are discovered in greatest frequency and may require additional attention. The data could affect where states allocate resources and how they perform on-site UST inspections, where the regulated community can best allocate their resources to improve compliance, and future decisions regarding the long-term direction of state and federal programs. The UST task force plans to update this report on an annual basis to track any trends across the UST programs.
http://www.astswmo.org/Files/Policies_and_Publications/Tanks/2014-04-USTCommonComplianceViolationsReport-Final.pdf

RESPONDING TO OIL SPILLS IN THE U.S. ARCTIC MARINE ENVIRONMENT
National Research Council.
National Academies Press, Washington, DC. ISBN: 978-0-309-30370-5, 250 pp, 2014

U.S. Arctic waters north of the Bering Strait and west of the Canadian border encompass a vast area that usually is ice covered for much of the year but increasingly is experiencing longer periods and larger areas of open water due to climate change. Sparsely inhabited and with a wide variety of ecosystems found nowhere else, this region is vulnerable to damage from human activities. This report reviews the current state of the science regarding oil spill response and environmental assessment in the Arctic region north of the Bering Strait, describes the unique ecosystems and environment of the Arctic, and makes recommendations to provide an effective response effort in these challenging conditions. The authors identify key oil spill research priorities, critical data and monitoring needs, mitigation strategies, and important operational and logistical issues. http://www.nap.edu/catalog.php?record_id=18625

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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