

Technology Innovation News Survey

Entries for December 16-31, 2016

Market/Commercialization Information

2017 BROAD AGENCY ANNOUNCEMENT (BAA)

U.S. Army Corps of Engineers, USACE ITL, GSL, EL, CHL, Vicksburg, MS.
Federal Business Opportunities, FBO-5544, Solicitation W912HZ-17-BAA-01.

The U.S. Army Engineer Research and Development Center (ERDC) issued a BAA for a wide range of R&D topics for its laboratories in Mississippi, New Hampshire, Illinois, and Virginia. The ERDC is responsible for conducting research in the broad fields of hydraulics, dredging, coastal engineering, instrumentation, oceanography, remote sensing, geotechnical engineering, earthquake engineering, soil effects, vehicle mobility, self-contained munitions, military engineering, geophysics, pavements, protective structures, aquatic plants, water quality, dredged material, treatment of hazardous waste, wetlands, physical/mechanical/chemical properties of snow and other frozen precipitation, infrastructure and environmental issues, computer science, telecommunications management, energy, facilities maintenance, materials and structures, engineering processes, land and heritage conservation, and ecological processes. The BAA is open for one year (until January 31, 2018) or until superseded. Proposals may be accepted at any time. Details are available at <https://www.grants.gov/web/grants/view-opportunity.html?oppId=251630>.

ANNUAL BROAD AGENCY ANNOUNCEMENT (BAA) - FY17 ENVIRONMENTAL INITIATIVES FOR NAVFAC EXWC

Naval Facilities Engineering Command, NAVFAC Expeditionary Warfare Center, Port Huenuene, CA.
Federal Business Opportunities, FBO-5560, Solicitation N3943017R7201, 2017

This BAA is open until February 9, 2018. Proposals may be submitted at any time during this period. NAVFAC EXWC is seeking technologies and methodologies to reduce environmental impacts from current and past Navy operations. Areas of interest include Topic No. 1: Environmental assessment, restoration and cleanup, and Topic No. 3: Unexploded ordnance (UXO) detection, location, de-energizing, disposal, or remediation. When a proposal abstract aligns with a customer need and funding, the contracting office may request a full proposal. As no funding for contracts has been reserved in advance, NEXWC will be sharing qualified abstracts with other federal government activities to seek demonstration sites and/or funding. This notice requests abstracts/white papers only, which can be submitted using the abstract form and instructions at http://www.navfac.navy.mil/navfac_worldwide/capability_centers/exwc/products_and_services/exwc/baa.html. FedBizOpps notice at <https://www.fbo.gov/oi/cas/87c373a15a6c215d6a57d2a9e927d2f6>.

MARKETPLACE 2017: PROCUREMENT OPPORTUNITIES FOR SMALL BUSINESS

U.S. EPA, Office of Acquisition Management, RTP Procurement Operations Division, NC.
Federal Business Opportunities, FBO-5612, Solicitation RQ-KT-17-00125, 2017

Marketplace 2017 will be held in Durham, NC, on May 31, 2017, at the Sheraton Imperial Hotel and Convention Center. The Marketplace event is a biennial regional "reverse" trade show that provides small business owners a broad-based business opportunity to meet contracting officers from over 50 large prime contractors and federal, state, and local government agencies. Contracting officers and representatives from industry will present training sessions and answer questions on a variety of contracting topics. The Marketplace 2017 website hosts the complete event agenda and electronic registration at <http://www.shrc.org/events/marketplace/>.

OIL SPILL RESPONSE TRAINING, WORLDWIDE

Naval Facilities Engineering Command, NAVFAC EXWC Port Huenuene, CA.
Federal Business Opportunities, FBO-5560, Solicitation N3943017R1912, 2017

The Naval Facilities Engineering and Expeditionary Warfare Center in Port Huenuene, California, is soliciting proposals for a contract to provide Oil Spill Response Training via instruction of three classes—Facility Response Plan Training, Spill Management Team Training, and New Skimmer Training at various locations worldwide. The solicitation is available at <https://www.nepo.navy.mil> under solicitation number N3943017R1912. The resulting contract will be a single-award, firm-fixed-price IDIQ contract with a skimming period of 60 months. This requirement is set aside for service-disabled veteran-owned small businesses under NAICS code 541620. Quotes must be received by 4:00 PM PT on May 12, 2017.

PORTSMOUTH PADUCAH PROJECT OFFICE TECHNICAL SUPPORT SERVICES

U.S. Department of Energy, Naval Reactors Laboratory Field Office, West Mifflin, PA.
Federal Business Opportunities, FBO-5606, Solicitation DE-SOL-0010125, 2017

U.S. DOE has released a Draft RFP for Portsmouth Paducah Project Office Technical Support Services. Interested parties are encouraged to review the Draft RFP and provide suggestions, comments, and questions in writing to the POC. The Draft RFP is available only on FedConnect at <https://www.fedconnect.net/FedConnectDefault.aspx?ReturnUrl=/?fedconnect%2F%3Fdoc%3DDE-SOL-0010125%26agency%3DDE&doc=DE-SOL-0010125&agency=DOE> (Note: It might be necessary to copy/paste the URL into your browser for direct access). Release of the final RFP is tentatively expected in the 3rd quarter of Government FY2017. The contract will provide technical and administrative support to assist DOE with the oversight and management of cleanup activities at the Portsmouth Gaseous Diffusion Plant site in Pike County, Ohio, and the Paducah Gaseous Diffusion Plant site in Paducah, Kentucky; operation of the Depleted Uranium Hexafluoride Conversion Project in Pike County and Paducah; and various technical engineering functions, information technology infrastructure support, information technology infrastructure support, and general administrative support for these sites. A small business set-aside is anticipated. The period of performance consists of a 60-day transition period, a 3-year base period, and one 2-year option.

\$200M SMALL BUSINESS ENVIRONMENTAL REMEDIATION SERVICES WITH MILITARY MUNITIONS RESPONSE PROGRAM: IDIQ MATOC

U.S. Army Corps of Engineers, USACE District, Omaha.
Federal Business Opportunities, FBO-5606, Solicitation W9128F-17-R-0013, 2017

The USACE Omaha District has issued a small business set-aside solicitation for an IDIQ multiple-award task-order contract for Environmental Remediation Services with Military Munitions Response Program Services for customers of the Northwestern Division. This solicitation will facilitate up to five contract awards with a maximum shared capacity of \$200M. Each contract awarded under this MATOC will have a 3-year base period and a 2-year option. From this solicitation, the Government also intends to award a task order for Site Inspection of Aqueous Film Forming Agents and Military Munitions Response Program Investigation at Pueblo Chemical Depot (Colorado). Proposals are due by 2:00 PM CT on May 19, 2017. <https://www.fbo.gov/oi/cas/USA/CFE/DAC/AS/09170E-17-R-0013/instrum.html>.

Cleanup News

INNOVATIVE COMBINED REMEDIES APPROACH USING LIQUID ACTIVATED CARBON (LAC) AND CALCIUM OXYHYDROXIDE APPLIED TO BENZENE PLUME REACHES NON-DETECT WITHIN 30 DAYS

Northington, C., A. Cedzo, and C. Hultgren.

IPEC 2016: 23rd Annual International Petroleum Environmental Conference, 20 slides, 2016

An active service station site in the Pacific Northwest was contaminated with MTBE, benzene, and TPH concentrations from a petroleum release. Following initial remediation efforts, low-level residual BTEX (particularly benzene) and TPH concentrations persisted. A combined remedy of liquid activated carbon (LAC) and calcium oxyhydroxide was designed and subsequently implemented in a single injection event. The multi-step verification process conducted prior to remediation included (1) a clear water injection to test aquifer properties, soil borings, and field hydrometer assessment for detailed characterization of the proposed treatment area and (2) a pilot injection of LAC to test distribution. The verification testing showed that despite classification of the site soils as clays and silts, formation permeability allowed for good distribution of the reagent. Injection pressures remained below 5 psi for LAC and below 10 psi for calcium oxyhydroxide. Distribution >12 feet was observed. The verification process was an integral part of the project, helping to characterize true hydrogeologic conditions more accurately. Co-application of the two injectants quickly sorbed dissolved-phase contaminants and promoted aerobic biodegradation, achieving non-detect within 30 days and maintaining that level for over a year.

300-FF-6 OPERABLE UNIT ENHANCED ATTENUATION STAGE A DELIVERY PERFORMANCE REPORT

SGW-59614, 1039 pp, 2016

This report presents the results and performance evaluation of the Stage A remedy implemented during November 2015 to sequester residual uranium (U) within the soil and groundwater underlying the 300-FF-6 Operable Unit in the 300 Area of DOE's Hanford facility. Cleanup of the 300 Area is being accomplished under CERCLA in accordance with the 300 Area ROD. Part of the selected remedy for the 300 Area is U immobilization or stabilization using polyphosphate solutions to sequester the uranium and reduce its mobility in the vadose zone, the periodically rewetted zone (PRZ), and the top of the aquifer. The remedy is being implemented in a 3-acre area of high residual U contamination in two sequential stages. During implementation of Stage A (November 6-18, 2015) within an area of ~0.75 acres, polyphosphate solutions were applied to the vadose zone using a near-surface drip infiltration system, to the PRZ using subsurface injection, and to the top of the aquifer using a deep water injection system. A monitoring and verification program was used to monitor polyphosphate solution migration. Data collected during and following treatment indicated successful delivery of high phosphate concentrations to the PRZ and to the top of aquifer using injection wells. This report also identifies refinements needed for implementation of Stage B, which will be performed in an adjacent area of 2.25 acres. (Note: this document is extremely large and may take many minutes to open.) <http://pdw.banford.gov/varip/index.cfm/docDetail?accession=00727774>

Demonstrations / Feasibility Studies

POLYHYDROXYALKANOATE AS A SLOW-RELEASE CARBON SOURCE FOR IN SITU BIOREMEDIATION OF CONTAMINATED AQUIFERS: FROM LABORATORY INVESTIGATION TO PILOT-SCALE TESTING IN THE FIELD

Pirro, L., B. Matturo, S. Rasetto, M. Seglieschi, S. Sucato, E. Alessi, E. Bartschi, F. Arjmand, and M.P. Papini.
New Biotechnology doi: 10.1016/j.nbt.2016.11.004. [Epub ahead of print] 2016

A pilot study was conducted to evaluate the potential use of poly-3-hydroxy-butyrate (PHB) as an electron donor source for in situ bioremediation of chlorinated hydrocarbons in groundwater. Compared with commercially available electron donors, PHB offers a restricted fermentation pathway (i.e., through acetic acid and molecular hydrogen) by avoiding the formation of any residual carbon that might adversely affect groundwater quality. The study was carried out at an industrial site in Italy heavily contaminated by different chlorinated aliphatic hydrocarbons (CAHs). Owing to the complex geological characteristics of the aquifer, a 3-screened groundwater circulation well (GCW) 30 m deep was installed to mobilize contaminants and promote effective delivery and distribution of electron donors in the less permeable layers. The GCW was coupled with an external treatment unit. Results from the first 4 months of operation clearly demonstrated that PHB fermentation products were delivered to the aquifer and positively influenced biological dechlorination activity. Increased abundance of *Dehalococcoides mccartyi* (up to 6.6-fold) and reduced CAH concentrations at the monitoring wells were observed.

PARCEL F CARBON AMENDMENT PLACEMENT PILOT STUDY, HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

Hicks, G.L.

Western Dredging Association Midwest 2016 Chapter Meeting, 23-25 March, Davenport, Iowa. 14 slides, 2016

A field pilot study conducted in June 2015 distributed two types of activated carbon (AquaGate® and SedIMite™) over a 1-acre portion of the PCB-contaminated South Basin to evaluate the potential improvement to aquatic habitat. The amendments were delivered directly into bay waters during high tide via a barge with a conveyor belt system. Placement was performed at night to take advantage of the highest tide conditions. Natural processes (bioturbation) were considered sufficient to work the activated carbon into the sediment. Lessons learned include the following:

- Full-scale equipment requires high tide conditions to place amendments in shallow tidal and sub-tidal mudflats, which narrows the windows of opportunity for placement operations.
- Skilled equipment operators utilizing computerized positioning equipment are required for optimum placement results.
- The specialized diffuser used at the end of the telebelt delivery system was critical to the successful placement of the required amendment thicknesses.

Samples collected 6, 12, and 24 months post-carbon placement will allow habitat effects to be determined.

https://westerndredging.org/index.php?option=com_content&view=article&id=2212-2016-innovation-2016-parcel-f-carbon-amendment-placement-pilot-study-hunters-point-naval-shipyards-san-francisco-california, Work Plan details: <http://www.wda.org/Content/Files/WorkPlan/2016-2017-WorkPlan/2016-2017-WorkPlan-Parcel-F-Carbon-Amendment-Placement-Pilot-Study-Hunters-Point-Naval-Shipyards-San-Francisco-California.pdf>

Research

SCALE-UP OF THE ELECTROKINETIC FENCE TECHNOLOGY FOR THE REMOVAL OF PESTICIDES. PART I: SOME NOTES ABOUT THE TRANSPORT OF INORGANIC SPECIES

Lopez-Vizcaino, R., C. Risco, J. Isidro, S. Rodrigo, C. Saez, P. Canizares, V. Navarro, M.A. Rodrigo.
Chemosphere 166:540-548(2017)

Results from the application of electrokinetic fence technology in a large prototype containing 32 m³ of herbicide-contaminated soil were compared with results previously obtained in a pilot-scale mockup (175 L) and with results obtained in a lab soil column (1 L), all of them operated under an electric field of 1.0 V/cm. Within this work context, this work focuses on the effects of inorganic species contained in soil and describes the main processes occurring in the prototype facility, as well as the differences observed in the lower scale plants. Important differences were observed in the evolution of current intensity, moisture, and conductivity that can be related to the less important electroosmotic fluxes in the larger facilities and to the very different distances between electrodes, which led to different distribution of species and even to a different evolution of the resulting current intensity. 2-D maps of the main species at different relevant moments of the test are discussed. Manuscript version: <https://ui.adsabs.harvard.edu/abs/2017ChemP...166..540L>

SCALE-UP OF THE ELECTROKINETIC FENCE TECHNOLOGY FOR THE REMOVAL OF HERBICIDES. PART II: DOES SIZE MATTER FOR REMOVAL OF HERBICIDES?

Lopez-Vizcaino, R., C. Risco, J. Isidro, S. Rodrigo, C. Saez, P. Canizares, V. Navarro, M.A. Rodrigo.
Chemosphere 166:549-555(2017)

This work reports results of the application of electrokinetic fence technology in a 32 m³ prototype that contains soil polluted with 2,4-D and oxyfluorfen, focusing on the evaluation of the mechanisms that describe the removal of these two herbicides and comparing results to those obtained in smaller plants: a pilot-scale mockup (175 L) and a lab-scale soil column (1 L). Results show that electric heating of soil (coupled with the increase in the volatility) is the key to explain the removal of pollutants in the largest facility while electrokinetic transport processes are the primary mechanisms that explain the removal of herbicides in the lab-scale plant. 2-D and 3-D maps of the temperature and pollutant concentrations illuminate the mechanisms affecting the size of the setup that can lead to different conclusions, despite the occurrence of the same processes in the soil. Manuscript version: <https://ui.adsabs.harvard.edu/abs/2017ChemP...166..549L>

EFFECT OF ALTERNATING BIOREMEDIATION AND ELECTROKINETICS ON THE REMEDIATION OF N-HEXADECANE-CONTAMINATED SOIL

Wang, S., S. Guo, F. Teng, and J. Wang.
Scientific Reports 6:23833(2016)

Highly efficient degradation of n-hexadecane in soil was realized by alternating bioremediation and electrokinetic technologies. Using alternating technologies instead of simultaneous application prevented competition between the processes that could lower their efficiency. For the consumption of the soil dissolved organic matter (DOM) necessary for bioremediation by electrokinetics, bioremediation was performed first. Because of the utilization and loss of the DOM and water-soluble ions by the microbial and electrokinetic processes, respectively, both of them were supplemented to provide a basic carbon resource, maintain high electrical conductivity, and produce a uniform distribution of ions. Moisture and bacteria were also supplemented in the treatment. The results showed that the removal of n-hexadecane in soil was significantly enhanced by alternating technologies. The degradation rate of n-hexadecane was only 167.0 mg/kg/d (1.9%, w/w) for the first 9 days in the treatments with bioremediation or electrokinetics alone, but this rate was realized throughout the whole process when the two technologies were alternated, achieving 78.5%±72.0% n-hexadecane degradation after 457 days of treatment. This paper is **Open Access** at <http://www.nature.com/articles/scrap23833>.

ASSISTED BIOREMEDIATION APPROACHES — BIOSTIMULATION AND BIOAUGMENTATION — USED IN THE REMOVAL OF ORGANOCHLORINATED POLLUTANTS FROM THE CONTAMINATED BOTTOM SEDIMENTS

Lazlova, K., K. Dercova, H. Horvathova, S. Murinova, J. Skarba, and H. Dudasova.

The feasibility of using biostimulation and bioaugmentation to remove PCBs from contaminated sediment collected from the sewage canal of a former PCB manufacturing plant in Slovakia was studied. Eleven bacterial strains isolated in previous work from the canal sediments were able to degrade significant amounts of PCBs aerobically. Five of the bacterial isolates obtained were used in bioaugmentation treatment individually as single strains and also within eight artificially prepared consortia containing two or three strains. Bioaugmentation by a single strain was performed in another set of experiments combined with the addition of nonionic surfactants (Triton X and Tween 80) to increase PCBs bioavailability and with the addition of terpenes (carvone and limonene) to induce the required enzymes. The highest PCB biodegradation via biostimulation was obtained using addition of nitrogen, phosphorus, and oxygen to the indigenous microorganisms naturally present in the contaminated sediment. The highest biodegradation of PCBs in bioaugmentation experiments was obtained with the individual bacterial isolates (one Gram-positive and one Gram-negative) and with a lab-prepared consortium consisting of three selected bacterial isolates. Addition of Tween 80 led to higher biodegradation of PCBs than Triton X. Bioaugmentation via the addition of single bacterial isolate and surfactant Tween 80 improved elimination of the evaluated indicator PCB congeners to the highest extent. http://ijer.ijer.us.ac.ir/article_58756_2_765959e5f2729994f97d1e1b89467a.pdf.

ENGINEERS DEVELOPING CLEANUP METHOD FOR STUBBORN CONTAMINANTS

Manning, A.J.
Phys.org News, 14 Nov 2016

Colorado State University environmental engineers are testing a promising new way to clean up perfluorinated compounds (PFCs), supported by DoD's Strategic Environmental Research and Development Program. The team will test an electrolysis-based technique for treating groundwater tainted with PFCs. The method harnesses electricity-induced chemical reactions in the groundwater to transform the organic compounds and other contaminants into carbon dioxide, fluoride, and other benign substances. The team will use lab reactors to test novel tin oxide-based mesh barriers (i.e., electrolytic barriers) that look like window screens flanked by solar-powered, direct-current-inducing electrodes. The mesh barriers are inserted into flowing groundwater, and as the water naturally flows through the charged barriers, contaminants are broken into their harmless constituent parts. The barriers should also be able to treat other persistent contaminants such as 1,4-dioxane, which is often found alongside PFCs. Sale and colleagues previously field-tested this technology on other chemicals. In later phases of the project, the team will test the barriers in conjunction with bacterial and fungal colonies that have been found to neutralize dioxane contamination. The researchers expect that the electrochemistry and the bacterial and fungal methods, taken together, will treat PFC-contaminated groundwater effectively. <http://phys.org/news/2016-11-cleanup-method-stubborn-contaminants.html>.

A BIOSURFACTANT-POLYSTYRENE POLYMER PARTITION SYSTEM FOR REMEDIATING COAL TAR-CONTAMINATED SEDIMENT

Wilton, N.M., C.D. Ziegler, R. Leardi, and A. Robbat Jr.
Soil and Sediment Contamination: An International Journal 25(6):683-699(2016)

A sustainable green chemistry process is proposed for the cleanup in

TREATMENT OF EX-SITU SOIL-WASHING FLUIDS POLLUTED WITH PETROLEUM BY ANODIC OXIDATION, PHOTOLYSIS, SONOLYSIS AND COMBINED APPROACHES

Vieira dos Santos, E., C. Saez, P. Canizares, D. Ribeiro da Silva, C.A. Martínez-Huete, and M.A. Rodrigo.
Chemical Engineering Journal 310(2):581-598(2017)

Remediation of soil spiked with petroleum was studied using a surfactant-aided soil washing (SASW) process followed by sonolysis (US), photolysis, and boron-doped diamond electrolysis (BDD-electrolysis). Results demonstrated that SASW is a very efficient approach to soil treatment, removing completely the petrochemical compounds by using >5 g of extracting surfactant (sodium dodecyl sulfate, or SDS) per kg of soil. Treatment efficiency and the main characteristics of the effluents produced in this treatment depend on SDS dosage. Degradation and mineralization of the organic matter in the effluents are broken into the reduction in size of micelles formed by SDS and petroleum, depending on the treatment used. US and photolysis were inefficient decontamination processes, whereas BDD-electrolysis favored complete micelles depletion; however, intensification of efficiency was attained by synergic degradation effects when UV light irradiation and US were coupled with BDD-electrolysis, US/BDD-electrolysis, and photo/BDD-electrolysis, respectively. Sulfate (coming from SDS) ions play an important role during BDD-electrolysis, US/BDD-electrolysis, and photo/BDD-electrolysis because of persulfate and persulfate radicals that are produced by sulfate activation when applying US or photolysis, and thus improving process efficiency.

NEW TECHNIQUE COULD LEAD TO SAFER, MORE EFFICIENT URANIUM EXTRACTION, AID ENVIRONMENTAL CLEANUP

Oregon State University News Release, 26 Jan 2017

The separation of uranium could potentially be done more safely and efficiently through a technique developed by chemistry researchers at Oregon State University. The technique uses surfactants to extract uranium from an aqueous solution into a kerosene solution in the form of hollow clusters. This innovation might have value for legacy waste treatment, cleanup of environmental contamination, and nuclear fuel preparation. The research at OSU involves a unique form of uranium discovered in 2005, uranyl peroxide capsules, and how those negatively charged clusters form in alkaline conditions. The work represents significant fundamental research in the field of cluster chemistry because it allows for the study of uranyl clusters in the organic phase and can pave the way to improved understanding of ion association. When the clusters form, each contains 20 to 60 uranium atoms, which allows for greatly enhanced extraction. Existing separation techniques require two extractors for every uranium ion, whereas the OSU technique requires less than one extraction molecule per ion. <http://oregonstate.edu/us/news/archives/2017/01/new-technique-could-lead-safer-more-efficient-uranium-extraction-aid-environmental>. This research was recently published in the European Journal of Inorganic Chemistry at <http://onlinelibrary.wiley.com/doi/10.1002/ejic.201601219/abstract>.

UNINTENTIONAL CONTAMINANT TRANSFER FROM GROUNDWATER TO THE VADOSE ZONE VIA GAS EXSOLUTION AND EBULLITION DURING REMEDIATION OF VOLATILE ORGANIC COMPOUNDS

Chong, Andrea Denise, Master's thesis, University of British Columbia, 142 pp, 2016

It is well known that in situ remediation methods can generate gas. CO₂ in the case of in situ chemical oxidation (ISCO) using permanganate, CO₂ and CH₄ in the case of bioremediation using substrate addition. It is hypothesized that the generation of gas and the presence of VOCs, including chlorinated solvents, may lead to stripping of the contaminants from the source zone by gas exsolution and ebullition and further lead to "compartment transfer", whereby contaminants are transported away from the saturated zone into the vadose zone. Two sites in the U.S. undergoing enhanced bioremediation have exhibited behavior suggestive of contaminant transfer into the vadose zone via gas generated during remediation. For additional investigation into this process, benchtop column experiments were conducted to observe the effect of gas generation during remediation of TCE using ISCO and enhanced bioremediation. Results confirm that these remediation methods produce gas and induce vertical transport of contaminants away from the treatment zone, following the formation of a discontinuous gas phase (bubbles). The generation of gas and the potential for unintentional contaminant stripping and transport should be taken into consideration when treating VOCs to avoid release into the atmosphere or into underground structures via vapor intrusion. Results also suggest that the suitability of gas-generating remediation techniques in proximity to buildings and in populated areas should be evaluated with care. <https://open.library.ubc.ca/media/download/pdf/24/1/0224815/4>.

General News

GUIDANCE FOR PERFORMING TESTS ON DREDGED MATERIAL PROPOSED FOR OCEAN DISPOSAL

U.S. Army Corps of Engineers, New York District/U.S. EPA Region 2. 116 pp, 2016

This guide was prepared by EPA Region 2 in cooperation with the New York District of the U.S. Army Corps of Engineers (USACE) to provide guidance for applicants proposing to dredge and place dredged material at the Historic Area Remediation Site in the Atlantic Ocean. Under section 103 of the Marine Protection, Research and Sanctuaries Act and section 404 of the Clean Water Act, the Corps and EPA have issued national guidance and testing requirements to evaluate dredged material for open water disposal. The national guidance manuals are called the "Green Book" and the "Inland Testing Manual." This regional manual conveys instructions for implementing the broad technical guidance contained in the Green Book by providing regional specifications such as the acceptable species for use in biological tests; the identification of contaminants of regional concern; Region-specific quality assurance requirements; and other methodologies that reflect the exposures and receptors that are appropriate for regional sediment assessments. This Region 2 guide is available with other regional and national dredging guidance documents at <https://www.epa.gov/ocean/dumping/dredged-material-testing-and-evaluation-ocean-disposal>.

CONTAMINATED AQUATIC SEDIMENTS

Jaglal, K.
Water Environment Research 88(10):1564-1593(2016)

This paper presents a review of the literature published in 2015 relating to the assessment, evaluation, and remediation of contaminated aquatic sediments. The review is divided into sections on policy and guidance, methodology, distribution, fate and transport, risk, toxicity, and remediation. http://www.wer.com/uploads/issn0890/WER201510Rev_Contaminated_Aquatic_Sediments_Jaglal.pdf.

DEFINITION AND PROCEDURE FOR THE DETERMINATION OF THE METHOD DETECTION LIMIT, REVISION 2

U.S. EPA, Office of Water.
EPA 821-R-16-006, 8 pp, 2016

The method detection limit (MDL) procedure is designed to be a straightforward technique for estimation of the detection limit for a broad variety of physical and chemical methods. The 2016 revision of the MDL procedure differs in three significant ways from Revision 1.11: (1) The procedure now uses method blanks in addition to the spiked samples to calculate an MDL, hence "The method detection limit (MDL) is defined as the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results." The value calculated from the spiked samples is called the MDL_S, which is the same as the MDL calculation in Revision 1.11. The method blank samples are used to calculate the MDL_B, which is a very similar calculation that also calculates the 99% confidence level that the result is derived from the sample rather than from contamination/noise. The MDL is the higher of the two values (either the MDL_S calculated using spiked samples or the MDL_B calculated using method blanks). (2) The MDL now requires that the samples used to calculate the MDL are representative of lab performance throughout the year, rather than on a single date. (3) A lab has the option to pool data from multiple instruments to calculate one MDL that represents multiple instruments. https://www.epa.gov/sites/production/files/2016-12/documents/mdl-procedure_rev2_12-13-2016.pdf.

PAG MANUAL: PROTECTIVE ACTION GUIDES AND PLANNING GUIDANCE FOR RADIOLOGICAL INCIDENTS

U.S. EPA, Office of Radiation and Indoor Air.
EPA 400-R-17-001, 114 pp, 2017

EPA, in coordination with a multi-agency working group within the Federal Radiological Preparedness Coordinating Committee, recently updated the PAG manual and announced the availability of the 2016 PAG Manual in the Federal Register on December 8, 2016. EPA subsequently amended Chapter 4 of the 2016 PAG Manual to incorporate guidance for radiation protection decisions concerning drinking water. The drinking water PAG does not in any way affect regulatory requirements or enforcement of the Safe Drinking Water Act, including MCLs for radionuclides. The drinking water PAG is guidance only and is intended for use by federal, state, and local emergency management officials in the unlikely event of significant radiological contamination incidents, such as a release from a nuclear power plant, a radiological dispersal device, or an improvised nuclear device, and for a duration that might last for weeks to months but not longer than one year. This 2017 revision supersedes the 1992, 2013 and 2016 manuals. <https://www.epa.gov/radiation/pag-manual-and-procedures>.

REVISIONS TO EPA'S PRELIMINARY REMEDIATION GOALS FOR RADIONUCLIDES (PRG) ELECTRONIC CALCULATOR

EPA has completed revisions to its online risk assessment tool, the PRG calculator. The +D and +E isotopes have been removed from the selection list; a user now can select the "Include daughters" checkbox to see PRG output for the entire chain. In the resident, farmer, and indoor worker soil external exposure equations, a new variable has been added (GSFB) to account for the gamma shielding provided by clean soil cover under a building. It is combined with GSF, the shielding provided by the building, to reduce exposures to receptors inside a building that lies atop clean soil over contaminated soil. For a detailed description of the changes, "Biota Modeling in EPA's Preliminary Remediation Goal and Dose Compliance Concentration Calculators" explains where the new intake rates, mass loading factors, and transfer factors were sourced and how they will be applied to the PRG calculator. The paper is found at https://epa-prgs.orl.gov/radionuclides/20161130_Biota_TM_KLM_Final.pdf. The revised version of the PRG calculator is available at <https://epa-prgs.orl.gov/radionuclides/>.

CONTROL OF ASBESTOS REGULATIONS 2012, INTERPRETATION FOR MANAGING AND WORKING WITH ASBESTOS IN SOIL AND CONSTRUCTION AND DEMOLITION MATERIALS: INDUSTRY GUIDANCE

Forster, S.
Contaminated Land: Applications in Real Environments (CL:AIRe), London. ISBN: 978-1-905046-30-0, 139 pp, 2016

CL:AIRe has been working to raise the profile of asbestos in soil in the European Union. This document presents an explanation of how the legal requirements of the Control of Asbestos Regulations 2012 have been interpreted to apply to work with asbestos-contaminated soil and construction/demolition materials. The broad purpose of this guide is to enable construction sector planners, designers, and practitioners to identify and manage asbestos contamination in the ground when considering the implications for development activities and risks that residual asbestos in the ground may pose to workers. <http://www.daira.co.uk/projects-and-initiatives/asbestos-in-soil>.

COAL PLANT DECOMMISSIONING: PLANT DECOMMISSIONING, REMEDIATION AND REDEVELOPMENT

EPA 560-F-16-003, 5 pp, 2016

Many coal-fired power plants are expected to close in coming years. Coal plant communities are faced with potentially long-term job and tax revenue loss, legacy environmental contamination, and the need for new economic opportunities. Preparing a site for reuse often is a complex, multi-year process that includes decommissioning the existing power plant, cleaning up contamination (e.g., in materials, soil, and groundwater), and creating and implementing a redevelopment plan. Local leadership that is committed to public involvement and the establishment of a balanced and inclusive stakeholder group can guide the process by considering the many factors and unique conditions of a coal plant site, along with the community's redevelopment goals. EPA prepared this fact sheet to help communities that might be affected by the closure of coal-fired power plants. Fact sheets covering stakeholder identification and facilitation as well as financing options and incentives are also available at <https://www.epa.gov/land-revitalization/land-revitalization-coal-plant-closure-and-redevelopment>.

COMPARISON OF INTERNATIONAL APPROACHES TO SUSTAINABLE REMEDIATION

Rizzo, E., P. Bardos, L. Pizzola, A. Critto, E. Giubliato, A. Marcomini, C. Albano, D. Darmendrail, G. Doeberl, M. Harclerode, N. Harries, P. Nathanail, C. Pachon, A. Rodriguez, H. Slenders, and G. Smith.
Journal of Environmental Management 184(1):4-17(2016)

Various initiatives have now published frameworks, standards, white papers, road maps, and operative guidelines for sustainable remediation programs. The similarities and differences in the approaches by these outputs and general trends are identified in this paper based upon a set of criteria developed in discussion with members of the different initiatives. Overall the comparison demonstrates a high level of consensus across definitions and principles, which leads to the conclusion that there is a shared understanding of what sustainable remediation is across both countries and stakeholder groups. Publications do differ in points of detail, in particular about the operational aspects of sustainable remediation assessment, which likely result from differences in context and legal framework.

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.

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.