



U.S. ENVIRONMENTAL PROTECTION AGENCY

TechDirect, February 1, 2018

Welcome to TechDirect! Since the January 1 message, TechDirect gained 62 new subscribers for a total of 39,594. If you feel the service is valuable, please share TechDirect with your colleagues. Anyone interested in subscribing may do so on CLU-IN at <https://clu-in.org/techdirect>. All previous issues of TechDirect are archived there. The TechDirect messages of the past can be searched by keyword or can be viewed as individual issues.



TechDirect's purpose is to identify new technical, policy and guidance resources related to the assessment and remediation of contaminated soil, sediments and groundwater.



Mention of non-EPA documents or presentations does not constitute a U.S. EPA endorsement of their contents, only an acknowledgment that they exist and may be relevant to the TechDirect audience.

> Open Solicitation

FY 2019 Environmental Security Technology Certification Program (ESTCP). The Department of Defense's (DoD) Environmental Security Technology Certification Program (ESTCP) released a solicitation on January 9, 2018, requesting proposals for demonstrations of environmental and installation energy technologies. Researchers from Federal organizations, universities, and private industry can apply for ESTCP funding. All proposals must respond to a Topic Area associated with the solicitation. ESTCP projects are formal demonstrations in which innovative technologies are rigorously evaluated. ESTCP demonstrations are conducted at DoD facilities and sites to document improved efficiency, reduced liability, improved environmental outcomes, and cost savings. The due date for all pre-proposals is March 8, 2018 by 2:00 p.m. ET. For details for both federal and non-federal submissions, see <https://serdp-estcp.org/Funding-Opportunities/ESTCP-Solicitations>.

> Upcoming Live Internet Seminars

ITRC Issues and Options in Human Health Risk Assessment - A Resource When Alternatives to Default Parameters and Scenarios are Proposed - February 1, 2018, 1:00PM-3:15PM EST (18:00-20:15 GMT). After participating in this ITRC training course, the learner will be able to apply ITRC's Decision Making at Contaminated Sites: Issues and Options in Human Health Risk (RISK-3, 2015) document when developing or reviewing site-specific risk assessments by: identifying common issues encountered when alternatives to default parameters and scenarios are proposed

during the planning, data evaluation, toxicity, exposure assessment, and risk characterization and providing possible options for addressing these issues; recognizing the value of proper planning and the role of stakeholders in the development and review of risk assessments; and providing information (that includes links to additional resources and tools) to support decision making when alternatives to default approaches, scenarios and parameters are proposed. For more information and to register, see <https://www.itrcweb.org> or <https://clu-in.org/live>.

ITRC Remediation Management of Complex Sites - February 6, 2018, 1:00PM-3:15PM EST (18:00-20:15 GMT). This training course and associated ITRC guidance: Remediation Management of Complex Sites (RMCS-1, 2017), provide a recommended holistic process for management of challenging sites, termed "adaptive site management." By participating in this training course we expect you will learn to apply the ITRC guidance document to: identify and integrate technical and nontechnical challenges into a holistic approach to remediation; use the Remediation Potential Assessment to identify whether adaptive site management is warranted due to site complexity; understand and apply adaptive site management principles; develop a long-term performance-based action plan; apply well-demonstrated techniques for effective stakeholder engagement; access additional resources, tools, and case studies most relevant for complex sites; and communicate the value of the guidance to regulators, practitioners, community members, and others. For more information and to register, see <https://www.itrcweb.org> or <https://clu-in.org/live>.

SERDP & ESTCP Webinar Series: Improved Methods to Evaluate Aerial Emissions and Develop Pollutant Emissions Factors - February 8, 2018, 12:00 PM ET (17:00 GMT). Join SERDP and ESTCP on Thursday, February 8 for a webinar detailing results from SERDP/ESTCP research into improved methods for evaluating aerial emissions and developing pollutant emission factors. Dr. Brian Gullett, a researcher at U.S. EPA, will present research findings with the potential to improve emission characterization of open area sources such as fires and open burn/open detonation activities. Dr. Kevin McNesby of the United States Army Research Laboratory will present research into developing methodologies to evaluate particle and gaseous emissions from metal-based energetic and pyrotechnic formulations. For more information and to register, <https://www.serdp-estcp.org/Tools-and-Training/Webinar-Series/02-08-2018>.

ITRC Bioavailability of Contaminants in Soil: Considerations for Human Health Risk Assessment - February 13, 2018, 1:00PM-3:15PM EST (18:00-20:15 GMT). The basis for this training course is the ITRC guidance: Bioavailability of Contaminants in Soil: Considerations for Human Health Risk Assessment (BCS-1). This guidance describes the general concepts of the bioavailability of contaminants in soil, reviews the state of the science, and discusses how to incorporate bioavailability into the human health risk assessment process. The target audience for this guidance and training course are: project managers interested in decreasing uncertainty in the risk assessment which may lead to reduced remedial action costs, and risk assessors new to bioavailability or those who want additional confidence and training in the current methods and common practices for using bioavailability assessment to more accurately determine human health risk at a contaminated site. As a participant in this training you should learn to: apply the decision process to determine when a site-specific bioavailability assessment may be appropriate, use the ITRC Review Checklist to develop or review a risk assessment that includes soil bioavailability, consider factors that affect arsenic, lead and PAH bioavailability, select appropriate methods to evaluate soil bioavailability, and use tools to develop site-specific soil bioavailability estimates and incorporate them into human health risk assessment. For more information and to register, see <https://www.itrcweb.org> or <https://clu-in.org/live>.

ITRC Characterization and Remediation of Fractured Rock - February 22, 2018, 1:00PM-3:15PM EST (18:00-20:15 GMT). The basis for this training course is the ITRC

guidance: Characterization and Remediation of Fractured Rock. The purpose of this guidance is to dispel the belief that fractured rock sites are too complex to characterize and remediate. The physical, chemical and contaminant transport concepts in fractured rock have similarities to unconsolidated porous media, yet there are important differences. By participating in this training class, you should learn to use ITRC's Fractured Rock Document to guide your decision making so you can: develop quality Conceptual Site Models (CSMs) for fractured rock sites, set realistic remedial objectives, select the best remedial options, monitor remedial progress and assess results, and value an interdisciplinary site team approach to bring collective expertise to improve decision making and to have confidence when going beyond containment and monitoring -- to actually remediating fractured rock sites. For more information and to register, see <https://www.itrcweb.org> or <https://clu-in.org/live>.

Superfund Redevelopment Initiative Series: Bringing Industrial Reuse to Superfund Sites - February 27, 2018, 2:00PM-3:30PM EST (19:00-20:30 GMT).

From cleanup to final settlement or leasing agreements, EPA plays a central role in facilitating the cleanup and redevelopment of contaminated sites by bringing together key parties. EPA works with stakeholders to negotiate settlement agreements, resolve competing liens and ensure future reuse is compatible with the cleanup. Collaborative work on the Buckbee-Mears site in Cortland, New York, and the Tex Tin Superfund site in Texas City, Texas, positioned sites for successful industrial reuse outcomes, advancing economic development opportunities throughout the community. For more information and to register, see <https://clu-in.org/live>.

FRTR Presents...Remediation Technologies for Radionuclides and Heavy Metals in Soil, Ground Water and Sediments, Session 1 - February 28, 2018, 1:00PM-3:00PM EST (18:00-20:00 GMT).

This webinar is part of a series featuring presentations delivered at the November 2017 FRTR Meeting. This meeting focused on remediation technologies for radionuclides and heavy metals in soil, ground water and sediments. More information about the meeting can be found at <https://frtr.gov/meetings1.htm>. This webinar will provide an overview of the technologies as well as the strategies to implement these technologies in remediation of radionuclides and heavy metals in soil, ground water, and sediments. The seminar will also describe the specific application of an in situ activated carbon amendment for sediment and soil mercury remediation. For more information and to register, see <https://clu-in.org/live>.

Highlight from the CLU-IN Seminar Archives. Each edition of TechDirect highlights a previously recorded internet seminar from our archives that may be of interest to our readers. We welcome your feedback on this addition to TechDirect.

Passive Treatment of Mining-Influenced Water: From Bench Scale to O&M, Sponsor: US EPA Technology Innovation and Field Services Division, Archive of Nov 14, 2016 Seminar (2 Hours).

Passive treatment refers to processes that do not require frequent human intervention, operation, or maintenance, and typically employ natural construction materials, natural treatment media, and promote growth of natural vegetation. Biochemical reactors (BCRs) are a type of passive treatment system that use microorganisms to remove contaminants from mining-influenced water (MIW). BCRs and other passive treatment processes can be cost-effective and lower-maintenance treatment options for mine site cleanups. They also offer significant opportunities to reduce the environmental footprint associated with treatment of MIW. In recent years, development and implementation of passive systems has increased. However, there's still plenty to learn about their effectiveness. Pilot studies are good ways to study passive treatment and their application scenarios. In this webinar, two case studies will be presented that document design and implementation of BCRs to passively treat MIW from bench-scale tests to full-scale operation and maintenance, including recovery of iron oxide byproducts for sale. For more information or to replay, visit http://www.clu-in.org/conf/tio/mining-pt_111416/.

> New Documents and Web Resources

EPA Office of Research and Development Journal Article: Cross Validation of Two Partitioning-Based Sampling Approaches in Mesocosms Containing PCB Contaminated Field Sediment, Biota, and Activated Carbon Amendment. Site managers and public health officials faced with the cleanup and rehabilitation of Superfund sites and other areas must carefully consider how to assess the bioavailability of hydrophobic compounds and other persistent contaminants to formulate plans, guide mitigation activities, and monitor progress. The "gold standard" would be a combination of the two broad categories of sampling methods developed over the past two decades: (1) laboratory-based (*ex situ*) equilibrium sampling using sediment samples and very thin polymers, and (2) on site (*in situ*) pre-equilibrium sampling, using performance reference compounds or time-sensitive measurements. The former offers highly controlled, well-defined, and relatively fast results that may not be particularly accurate for capturing field conditions. The latter provides site-specific results that better reflect contaminant bioavailability of real world field conditions, but can take months or even years to conduct. EPA researcher Robert M Burgess and partners recently released the results of a study exploring methods to find such a gold standard approach. The researchers conducted a series of experiments using both equilibrium and pre-equilibrium methods. Using sediments from New Bedford Harbor (a Superfund site) only, sediment plus living organisms (worms, clams, and fish), and sediment, organisms, and activated carbon, they compared results to cross validate the two different approaches. Results were promising, showing "good precision of both methods in overall good agreement," note the researchers. The study, presented in the journal *Environmental Science & Technology*, "is part of an ongoing project that combines quantitative thermodynamic exposure assessment and bioaccumulation studies to assess sediment restoration techniques based on amendment with activated carbon (AC)." View at https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=338150.

EPA Office of Research and Development Resource: Scenario Evaluator for Electrical Resistivity (SEER) Survey Pre-Modeling Tool. A major priority of EPA's Sustainable and Healthy Communities National Research program is to advance the cleanup of contaminated sites. To that end, researcher Dale Werkema and collaborators at the U.S. Geological Survey (Office of Groundwater) recently released an easy-to-use, spreadsheet-based tool to help site managers and others explore the value of using electrical resistivity imaging (ERI) before investing time and money into the technique to guide cleanup activities. While a powerful tool for creating maps of subterranean conditions such as underlying soil, bedrock, groundwater, and contaminant distribution, ERI typically involves intensive field work followed by expert modelling and evaluation. That work, in turn, can then show where to target remediation activities. With this new tool, users can perform quick, simple preliminary resistivity models right at their desktops before deciding to invest in full-scale ERI surveys. SEER is designed to have broad utility in industry, academia, and research. View and use at <https://water.usgs.gov/oqw/bqas/seer/>.

Technology Innovation News Survey Corner. The Technology Innovation News Survey contains market/commercialization information; reports on demonstrations, feasibility studies and research; and other news relevant to the hazardous waste community interested in technology development. Recent issues, complete archives, and subscription information is available at <https://clu-in.org/products/tins/>. The following resources were included in recent issues:

- User's Guide for Biodegradation Reactions in TMVOCBIO
- FAQs Regarding PFASs Associated with AFFF Use at U.S. Military Sites
- Bottle Selection and Other Sampling Considerations When Sampling for Per- and Poly-Fluoroalkyl Substances (PFAS) - Revision 1.2
- Characterization and Remediation of Fractured Rock
- Sediment Site Recontamination: Leveraging National Policies and Cross-Program Coordination Strategies
- Energetic Compounds on Military Training Ranges
- Study of Tailings Management Technologies
- The International Network for Acid Prevention (INAP)
- In Situ Leach Uranium Mining: An Overview Of Operations

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 15 resources, events, projects and news items were added to EUGRIS in January 2018. These can be viewed at <http://www.eugris.info/whatsnew.asp> . Then select the appropriate month and year for the updates in which you are interested. The following resource was posted on EUGRIS:

European Achievements in Soil Remediation and Brownfield Redevelopment (2017). This European Commission JRC report shares best practices of soil restoration and management of contaminated sites among European countries. Eight countries present a total of 17 cases which illustrate how soil and brownfields remediation along with sustainable land management have become essential for reversing the trend of soil degradation and ensuring the provision of ecosystem services by soil. The cases show progress in research and innovative technologies of soil remediation, new outstanding approaches to soil remediation management, beneficial integration of stakeholders in decision-making and fruitful progress in raising public awareness and citizen science. View or download at <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC102681/ki0217891enn.pdf>

> Conferences and Symposia

Best Practices for Site Characterization Throughout the Remediation Process, Philadelphia, PA, April 30-May 3, 2018. This training course is based on best management practices (BMP) implemented by the U.S. EPA, partnership organizations, federal and state partners, and consultants. Participants will learn how to streamline projects in a legal, technically sound, and cost-effective manner. By taking the course, participants achieve the following objectives: integrate best practices into traditional project activities, effectively collect and communicate critical project information, design dynamic work strategies, recognize and overcome the challenges presented while implementing a dynamic work strategy, and use BMPs to support all phases of the environmental cleanup life cycle. For more information and to register, see <https://trainex.org/offeringslist.cfm?courseid=1515>.

Incremental Sampling, Philadelphia, PA, May 3-4, 2018. This training course focuses on the theory and application of ITRC's Incremental Sampling Methodology (ISM), composite sampling designs, and hybrids of the two. IS hybrid designs are useful to address multiple project goals simultaneously. Since "representativeness" is a key aspect of data quality and ISM/IS data are demonstrably more representative than most discrete data, it will be argued that IS data are indeed "better" than non-IS data. The course will answer questions such as: what is the difference between ITRC's ISM and EPA's Incremental Sampling (IS) strategies? Is there written EPA guidance? What features should an ISM or IS design have? Can IS give project risk assessors the data they want, while simultaneously meeting the RPM's own data needs for

characterization or remedial design? How are background concentrations determined and comparisons to background handled using IS? Do we know whether IS "worked" for the project? For more information and to register, see

<https://trainex.org/offeringslist.cfm?courseid=1621>.

Groundwater High-Resolution Site Characterization (HRSC), Kansas City, MO, June 5-6, 2018. This training course focuses on groundwater characterization and discusses (1) the impacts of subsurface heterogeneity on the investigation and cleanup of groundwater and related media, (2) the need for scale-appropriate measurements and adequate data density, and (3) the tools and strategies that are available to overcome the impacts of subsurface heterogeneity. After taking this course, participants will be armed with information that will allow them to improve their subsurface investigation approaches and develop more realistic and comprehensive conceptual site models (CSM). CSMs developed based on HRSC strategies and tools will decrease site uncertainty, improve the remedy selection process for groundwater remedies, and better enable the evaluation, design, and implementation of targeted in situ and ex situ groundwater remedies. The Groundwater HRSC course is an advanced 2-day course. The recommended audience includes EPA, federal, state, tribal and private industry technical project managers, practitioners and other stakeholders involved in groundwater investigation and remediation. For more information and to register, see <https://trainex.org/hrsc>.

NOTE: For TechDirect, we prefer to concentrate mainly on new documents and the Internet live events. However, we do support an area on CLU-IN where announcement of conferences and courses can be regularly posted. We invite sponsors to input information on their events at <https://clu-in.org/courses>. Likewise, readers may visit this area for news of upcoming events that might be of interest. It allows users to search events by location, topic, time period, etc.

If you have any questions regarding TechDirect, contact Jean Balent at (703) 603-9924 or balent.jean@epa.gov. To unsubscribe, send a blank email to [\\$subst\('Email.UnSub'\)](mailto:$subst('Email.UnSub')). Remember, you may subscribe, unsubscribe or change your subscription address at <https://clu-in.org/techdirect> at any time night or day.

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