



TechDirect, November 1, 2019

Welcome to TechDirect! Since the October 1 message, TechDirect gained 39 new subscribers for a total of 39,229. 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.

> Requests for Proposals

FY 2020 Brownfields Assessment, Revolving Loan Fund, and Cleanup Grants.

These brownfields grants may be used to address sites contaminated by hazardous substances, pollutants, or contaminants (including hazardous substances co-mingled with petroleum) and petroleum. The deadline to submit an application is December 3, 2019 at 11:59 PM (EST). For more information and application instructions, see <https://www.epa.gov/brownfields/multipurpose-assessment-rif-and-cleanup-marc-grant-application-resources>.

FY 2021 Strategic Environmental Research and Development Program (SERDP) Solicitations.

The Department of Defense's SERDP is seeking environmental research and development proposals for funding beginning in FY 2021. Projects will be selected through a competitive process. The Core Solicitation provides funding opportunities for basic and applied research and advanced technology development. Core projects vary in cost and duration consistent with the scope of the work proposed. The Statements of Need (SON) referenced by this solicitation request proposals related to the SERDP program areas of Environmental Restoration (ER), Munitions Response (MR), Resource Conservation and Resiliency (RC), and Weapons Systems and Platforms (WP). The SERDP Exploratory Development (SEED) Solicitation provides funding opportunities for work that will investigate innovative environmental approaches that entail high technical risk or require supporting data to provide proof of concept. Funding is limited to not more than \$250,000 and projects are approximately one year in duration. This year, SERDP is requesting SEED proposals for the Munitions Response program area. All Core pre-proposals are due January 7, 2020. SEED proposals are due March 5, 2020. The SERDP Executive Director and Deputy Director will host a funding opportunities webinar on November 12, 2019. For more information and application instructions, see <https://www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations>.

> Upcoming Live Internet Seminars

Federal Facilities Online Academy - November 4, 2019 through September 14, 2020. This voluntary training program has been developed for EPA RPMs, project managers from other federal agencies, State government, and Tribal groups who work on federal facility Superfund cleanups. Please consider participating in all 12 courses, 11 Webinars and 1 In-Person Training, to obtain a certificate upon completion of the entire Federal Facility Academy series. For more information and to register, see <https://trainex.org/offeringlist.cfm?courseid=1819>.

ITRC Geospatial Analysis for Optimization at Environmental Sites - November 5, 2019, 1:00PM-3:15PM EST (18:00-20:15 GMT). The purpose of ITRC's Geospatial Analysis for Optimization at Environmental Sites (GRO-1) guidance document and this associated training is to explain, educate, and train state regulators and other practitioners in understanding and using geospatial analyses to evaluate optimization opportunities at environmental sites. With the ITRC GRO-1 web-based guidance document and this associated training class, project managers will be able to: evaluate available data and site needs to determine if geospatial analyses are appropriate for a given site; for a project and specific life-cycle stage, identify optimization questions where geospatial methods can contribute to better decision making; for a project and optimization question(s), select appropriate geospatial method(s) and software using the geospatial analysis work flow, tables and flow charts in the guidance document; with geospatial analyses results (note: some geospatial analyses may be performed by the project manager, but many geospatial analyses will be performed by technical experts), explain what the results mean and appropriately apply in decision making; and use the project manager's tool box, interactive flow charts for choosing geospatial methods and review checklist to use geospatial analyses confidently in decision making. For more information and to register, see <http://www.itrcweb.org> or <https://clu-in.org/live>.

SERDP & ESTCP Status of SERDP and ESTCP Efforts on PFAS and Innovative Approaches for Treatment of Waste Derived from PFAS Subsurface Investigations - November 7, 2019 12:00PM EDT (16:00 GMT). Join SERDP and ESTCP on Thursday, November 7 for a webinar detailing results from Department of Defense (DoD) research efforts on developing innovative approaches for the treatment of wastes derived from PFAS subsurface investigations. First, Dr. Andrea Leeson from SERDP and ESTCP will provide a status update on SERDP and ESTCP's PFAS efforts with a focus on projects funded by SERDP on managing investigation derived wastes. Dr. Leeson will also provide an overview of upcoming SERDP and ESTCP PFAS solicitations and will discuss important SERDP and ESTCP publicly-available PFAS resources. Second, Dr. Dave Major from Savron will talk about PFAS destruction through smoldering combustion, a sustainable and cost-effective technology to treat PFAS contamination in soils and investigation derived wastes. For more information and to register, see <https://www.serdp-estcp.org/Tools-and-Training/Webinar-Series/11-07-2019>.

US EPA Office of Research and Development Contaminated Sediments Virtual Workshop Series - November 13 and 20, 2019. The US EPA Office of Research and Development / Office of Science Policy (ORD/OSP) in cooperation with the Office of Land and Emergency Management (OLEM) is sponsoring a 4-part virtual workshop series to address current challenges at contaminated sediment sites. The aim of the virtual workshop is to provide interactive discussions between subject matter expert panelists and workshop participants. Consequently, each virtual session will feature brief topic introductions by panelists followed by facilitated panelist/participant discussions which will include opportunities for questions and answers, brainstorming,

identification of concerns and research needs, and quick spot surveys. The first two sessions are available in the seminar archives at <https://clu-in.org/live/archive/>. For more information and to register for the remaining two sessions, see <https://clu-in.org/live>.

ITRC Remediation Management of Complex Sites - November 14, 2019, 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>.

ITRC Characterization and Remediation of Fractured Rock - November 19, 2019, 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>.

ITRC Long-term Contaminant Management Using Institutional Controls - November 21, 2019, 1:00PM-3:15PM EST (18:00-20:15 GMT). Institutional controls (ICs) are administrative or legal restrictions that provide protection from exposure to contaminants on a site. When ICs are jeopardized or fail, direct exposure to human health and the environment can occur. While a variety of guidance and research to date has focused on the implementation of ICs, ITRC's Long-term Contaminant Management Using Institutional Controls (IC-1, 2016) guidance and this associated training class focuses on post-implementation IC management, including monitoring, evaluation, stakeholder communications, enforcement, and termination. The ITRC guidance and training will assist those who are responsible for the management and stewardship of ICs. After attending the training, participants will be able to: describe best practices and evolving trends for IC management at individual sites and across state agency programs; use this guidance to improve IC reliability and prevent IC failures, improve existing, or develop new, IC Management programs, identify the pros and cons about differing IC management approaches; use the tools to establish an LTS plan for specific sites; and use the elements in the tools to understand the information that should populate an IC registry or data management system. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

Substrate Longevity and Long-Term Performance of Biochemical Reactors for Passive Treatment of Mine-Impacted Water - November 25, 2019, 1:30PM-3:00PM EST (18:30-20:00 GMT). The Society of American Military Engineers (SAME) Denver Post and Philadelphia Post along with the US Environmental Protection Agency (EPA)

are hosting a series of webinars based on talks given at recent Design and Construction Issues at Hazardous Waste Sites (DCHWS) Symposiums. The mission of the DCHWS symposiums is to facilitate an interactive engagement between professionals from government and the private sector related to relevant and topical issues affecting applications of engineering and science associated with cleaning up hazardous waste sites. The symposiums also serve as a platform to facilitate the exchange of information, encourage dialogue, share experiences, and build and enhance communication among design and construction professionals. Biochemical reactors (BCR) have become an important treatment unit within passive treatment systems (PTS) designed for mine impacted water; however, operational longevity has remained a persistent concern. This presentation will present an overview on the background, history and principles on the use of BCRs to treat mine-impacted water. This will include a detailed review of the configuration, operation and performance of a typical BCR system and will provide data and observations from two long-term (>8 years) operating BCR systems as examples. This presentation will demonstrate that BCRs are an effective low cost, long term, and sustainable option for meeting water quality targets of mine impacted waters. This presentation will be a continuum of the two presentations previously presented (2018, 2019) in the DCHWS West forums. Both of the previous presentations focused on design, construction, and operation, while this presentation will focus on operation and maintenance, long-term performance, and overall system operational lifespan. For more information and to register, see <http://clu-in.org/live>.

FRTR Presents...Modeling in Support of Site Remediation, November 26 and December 4, 2019. This webinar series features presentations delivered at the Spring 2019 FRTR Meeting and related material, including the following topics. For more information and to register, see <http://clu-in.org/live>.

- Recognizing Critical Processes and Scales in Conceptual Site Models for Developing Decision Support Tools at Sites of Groundwater Contamination
- Simple vs. Complex Modeling: Choosing the Appropriate Level of Complexity When Using Groundwater Modeling in Remediation
- Developing Long-Term Monitoring Strategies for Radiological Contamination Thru Modeling & Machine Learning - Demonstrations at Fukushima and Savannah River Site
- U.S. EPA Experience in Using Models to Support Remediation
- Role of Modeling in the Remediation of the WP14/LF15 Chlorinated Solvent Plume at Dover Air Force Base, Delaware
- Tooele Army Ordnance Depot - Continuous Improvement of a Groundwater Model for Remedy Decision-Making over a 25-Year Period

ITRC TPH Risk Evaluation at Petroleum-Contaminated Sites - December 3, 2019, 1:00PM-3:15PM EST (18:00-20:15 GMT). The basis for this training course is the ITRC guidance: TPH Risk Evaluation at Petroleum-Contaminated Sites (TPHRisk-1, 2018). The guidance builds on long-standing and current research and experience, and presents the current science for evaluating TPH risk at petroleum-contaminated sites. As a participant in this training you should learn to: recognize the ITRC document as a go-to resource for evaluating TPH risk at petroleum-contaminated sites, recognize how TPH-impacted media interacts with the environment and changes over time, select appropriate analytic method(s) to match site objectives, and apply the decision framework to determine when a site-specific target level may be more appropriate than a generic screening level for TPH. For more information and to register, see <https://www.itrcweb.org> Or <https://clu-in.org/live>.

ITRC Panel Event: Stormwater Best Management Practices Performance Evaluation - December 5, 2019, 1:00PM-2:15PM EST (18:00-19:15 GMT). Are you interested in improving your stormwater best management practices (BMP)

performance? Could you improve your performance evaluations on the front end with publicly available data and throughout the BMP lifecycle? If so, join us for this ITRC interactive online panel session showcasing the ITRC Document: Stormwater Best Management Practices (BMP) Performance Evaluation (Stormwater-1). This panel event will provide you with: access to a centralized resource for information on stormwater BMP effectiveness; guidance to use during post-construction BMP screening, selection, installation, operation, and monitoring and maintenance; case study examples using the guidance; and answers to your questions about using ITRC's stormwater BMP tool and guidance. The panel session is intended to be a mix of interactive audience discussion and introductory material. Please come ready to ask questions and interact with the panel technical members. For more information and to register, see <https://www.itrcweb.org> or <https://clu-in.org/live>.

> New Documents and Web Resources

Greener Cleanup Metrics. The EPA "Principles for Greener Cleanups" provide a foundation for planning and implementing cleanups that protect human health and the environment while minimizing the environmental footprint of cleanup activities. EPA has developed 14 greener cleanup metrics that may be used to quantify specific portions of the footprint, such as the amounts of refined materials, public water or diesel fuel that are used or the amount of wastewater and hazardous waste that is generated. The metrics provide an optional means for regulators, private industry and other cleanup partners to collect and track site-specific footprint information across multiple sites in a uniform and transparent manner. On a project level, use of the metrics is anticipated to help the cleanup stakeholders identify best management practices (BMPs) that could be implemented to minimize the footprint. An Excel-based Greener Cleanup Metrics Workbook is available to help parties document and report the metrics. To learn more about the 14 metrics, download the workbook, or view related Q&As, visit <https://clu-in.org/greenremediation/greenercleanupmetrics>.

US EPA Office of Research and Development Journal Article: Measuring Arsenic Speciation in Groundwater. Arsenic toxicity and mobility in groundwater depend on its aqueous speciation. Uncertainty about the methods used for characterizing arsenic speciation in sulfate-reducing environments limits transport and fate analyses and the development of in-situ remediation approaches for treating impacted aquifers. The paper, "Thioarsenite Detection and Implications for Arsenic Transport in Groundwater," develops new anion-exchange chromatography methods linked to inductively coupled plasma mass spectrometry (ICP-MS) that allow for sample/eluent pH matching. Sample/eluent pH matching is advantageous to prevent thioarsenic species transformation during chromatographic separation because: 1) species protonation states remain unaffected, 2) hydroxyl-for-bisulfide ligand substitution is avoided, and 3) oxidation of reduced arsenic species is minimized. The results help resolve inconsistencies between spectroscopic and chromatographic evidence pertaining to the nature of arsenic in reducing groundwater. View at https://cfpub.epa.gov/si_public_record_Report.cfm?Lab=NRMRL&dirEntryId=347049 .

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 Guide: Pulverized Paper as a Soil Carbon Source for Degraded Training Lands
- Making a Difference in Communities: California Gulch Superfund Site (video)
- SRS Uses Recycled Iron to Treat Contaminated Groundwater
- Bio-restoration of Metal-Contaminated Soil Using Biochar to Enhance the Productivity of Marginal Land
- Model Predicts PAH Levels in Important Tribal Food Source
- Guidance for Assessing the Ecological Risks of PFASs to Threatened and Endangered Species at Aqueous Film Forming Foam-Impacted Sites
- PlumeSeeker and PBMO Technologies for Optimization of Site Characterization and Remediation (webinar)
- Technology guide: In-situ Air Sparging

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 5 resources, events, projects and news items were added to EUGRIS in October 2019. 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.

> Conferences and Symposia

2019 Design and Construction Issues at Hazardous Waste Sites (DCHWS) - West, Denver, CO, November 4-6, 2019. The Society of American Military Engineers Denver Metro Post is holding the third DCHWS-West Symposium to encourage dialogue and information sharing on design and construction issues relevant to hazardous waste sites in the western United States. The applications of engineering and science associated with cleaning up hazardous waste sites continue to evolve rapidly. The Symposium goal is to facilitate an interactive engagement between professionals from government and the private sector related to relevant and topical issues affecting our field. For more information and to register, see <https://www.same.org/Get-Connected/Find-a-Post/Denver/DCHWS-WEST>.

CL:AIRE 20th Anniversary Conference: Innovation, Efficiency & Standards - London, November 14, 2019. The Conference is being held to celebrate CL:AIRE's 20th year anniversary and our industry's achievements over the two decades. As significant as these landmarks are we will even more importantly be looking to the future and the challenges we may face. The Conference Programme is split between two lecture theatres, one focusing on technology and innovation in site investigation and remediation and the other on sustainable soil reuse and the Definition of Waste Code of Practice. Due to the nature of the parallel sessions we hope to attract large audiences, we have space for over 200 delegates, and the event presents an ideal opportunity to meet colleagues, establish new friendships and cross-fertilise new ideas. For more information and to register, see <https://www.claire.co.uk/events-training/cl-aire-20th-anniversary-conference>

Best Practices for Site Characterization Throughout the Remediation Process, Lenexa, KS, December 3-5, 2019. 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://www.trainex.org/BPSCR>.

2019 National Brownfields Training Conference, Los Angeles, CA, December 11-13, 2019. The National Brownfields Training Conference is the largest event in the nation focused on environmental revitalization and economic redevelopment. Held every two years, the National Brownfields Conference attracts nearly 3,000 stakeholders in brownfields redevelopment and cleanup to share knowledge about sustainable reuse and celebrate the EPA brownfields program's success. For more information and to register, see <https://brownfields2019.org>.

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. 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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