



TechDirect, October 1, 2018

Welcome to TechDirect! Since the September 1 message, TechDirect gained 32 new subscribers for a total of 38,958. 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.



> Upcoming Live Internet Seminars

Superfund Research Program Progress in Research Webinar Series - October 1, 2018, 1:00PM-3:00PM EDT (17:00-19:00 GMT). This Superfund Research Program (SRP) Progress in Research webinar series highlights promising research from SRP Centers awarded grants in 2017. In this last session, awardees from the Boston University, Texas A&M University, and University of California, Davis SRP Centers will describe their research projects, accomplishments, and next steps. The first three sessions held on August 23, September 4, and September 10 are available at <https://clu-in.org/live/archive/>. For more information and to register for the remaining session, see <https://clu-in.org/live>.

Superfund Task Force - Adaptive Management Pilot Criteria Document Review for Stakeholders - October 2, 2018, 10:00AM-11:30AM EDT (14:00-15:30 GMT). A memorandum entitled "Superfund Task Force Recommendation #3: Broaden the Use of Adaptive Management" was completed by EPA on July 3rd, 2018 which provided Superfund's working definition of Adaptive Management and outlined an implementation plan to expand Adaptive Management's use at Superfund sites. Per the implementation plan, EPA is in the process of seeking input on the pilot criteria with separate input from EPA, States/Tribes, and other stakeholders. This webinar is to provide stakeholders an overview of the Task Force Adaptive Management Implementation Plan and pilot criteria to support their review of the pilot criteria out for comment. For more information and to register, see <https://clu-in.org/live>.

ITRC Integrated DNAPL Site Characterization - October 2, 2018, 1:00PM-3:15PM EDT (17:00-19:15 GMT). The Integrated DNAPL Site Characterization Team has synthesized the knowledge about dense nonaqueous phase liquid (DNAPL) site characterization and remediation acquired over the past several decades, and has integrated that information into a new document, Integrated DNAPL Site Characterization and Tools Selection (ISC-1, 2015). This guidance is a resource to inform regulators, responsible parties, other problem holders, consultants, community stakeholders, and other interested parties of the critical concepts related to characterization approaches and tools for collecting subsurface data at DNAPL sites. After this associated training, participants will be able to use the guidance to develop and support an integrated approach to DNAPL site characterization, including: identify what site conditions must be considered when developing an informative DNAPL conceptual site model (CSM); define an objectives-based DNAPL characterization strategy; understand what tools and resources are available to improve the identification, collection, and evaluation of appropriate site characterization data; and navigate the DNAPL characterization tools table and select appropriate technologies to fill site-specific data gaps. For more information and to register, see <https://www.itrcweb.org>, OR <https://clu-in.org/live>.

SERDP & ESTCP Webinar Series: Managing Groundwater Impacts at Chlorinated Solvent Sites - October 4, 2018, 12:00PM-1:30PM EDT (16:00-17:30 GMT). Dr. Andrea Lesson, Deputy Director of SERDP and ESTCP and the Program Manager for the Environmental Restoration program area, discusses contaminated aquifer: remedy optimization, fine scale delineation, post remediation performance, long-term attenuation, mixed contamination, and abiotic attenuation. Mr. Evan Cox is a senior principal remediation scientist at Geosyntec Consultants. He will be presenting findings from a successful ESTCP project that utilized electrokinetically enhanced amendment technology to treat a tetrachloroethene source area in clay. For more information and to register, see <https://www.serdp-estcp.org/Tools-and-Training/Webinar-Series>.

NARPM Presents...Stress and Environmental Contamination: Tips and Tools from ATSDR - October 10, 2018, 1:00PM-3:00PM EDT (17:00-19:00 GMT). Environmental contamination can disrupt life as usual. Community members may feel stress for several reasons, including health and financial concerns. Join this webinar to learn more about stress, how it can affect health, and why environmental contamination can cause it. We'll offer practical tips and tools for acknowledging stress with community members and helping them cope. The webinar will wrap up with suggestions for dealing with stress you may feel as a professional working with communities affected by environmental contamination. For more information and to register, see <https://clu-in.org/live>.

Military Munitions Support Services - Accident Reporting - October 12, 2018, 1:00PM-5:00PM EDT (17:00-21:00 GMT). A mishap, as defined by EM 385-1-1, Safety and Health Requirements Manual-USACE-ARMY is any unplanned, undesired event that occurs during the course of work being performed. This includes accidents, incidents, and near misses. Reporting requirements and timelines are specific to the type of incident and are often confused by safety personnel. The result is that many

times the required timelines are not met. These procedures, associated timelines and reporting documents will be discussed in this webinar. In addition, the location of reporting forms and several specific examples will be discussed. For more information and to register, see <https://clu-in.org/live>.

FRTR Presents...Evolution of Subsurface Remediation: Lessons Learned from Technical Challenges to Achieving Cleanup Goals - Part 2 - October 17, 2018, 1:00PM-3:00PM EDT (17:00-19:00 GMT). This is the second half of a two-part webinar series featuring presentations delivered at the Spring 2018 FRTR Meeting. The meeting's goals were to identify and discuss case studies where remediation technologies were successful for a variety of soil and groundwater systems; and to share experiences and lessons learned that contributed to the operation of these successful remediation technologies. Part 1 from September 27 is available at <https://clu-in.org/live/archive/>. For more information and to register for the second session, see <https://clu-in.org/live>.

Borehole Geophysics Applied to Bedrock Hydrogeologic Evaluations - October 18, 2018, 1:00PM-2:30PM EDT (17:00-18:30 GMT). This presentation introduces the viewer to borehole geophysical tools commonly used in hydrogeologic investigations. These tools include gamma, temperature, conductivity, caliper, borehole video, acoustic and optical televiwers, heat-pulse flowmeter, and borehole deviation. Examples and case studies follow illustrating the usefulness of data obtained through the utilization of these tools, especially when used to design packer tests and multi-level discrete-zone sampling strings. In addition, borehole tools commonly used in shallow oil/gas well abandonment are presented. For more information and to register, see <https://clu-in.org/live>.

SERDP & ESTCP Webinar Series: Restoration of Chlorinated Solvent Contaminated Groundwater Sites: The Value of Information Challenge - October 18, 2018, 12:00PM-1:30PM EDT (16:00-17:30 GMT). This presentation will focus on the SERDP DIVER project (ER-2313). The DIVER project applies value of information (VOI) to outline a framework for the optimization of the site characterization process, such that the total cost of investigation, the cost of achieving remedial goals, and the risks of failure of remedial approaches are minimized. For more information and to register, see <https://www.serdp-estcp.org/Tools-and-Training/Webinar-Series>.

ITRC Remediation Management of Complex Sites - October 23, 2018, 1:00PM-3:15PM EDT (17:00-19:15 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 Issues and Options in Human Health Risk Assessment - A Resource When Alternatives to Default Parameters and Scenarios are Proposed - October 25, 2018, 1:00PM-3:15PM EDT (17:00-19:15 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 Connecting the Science to Managing LNAPL Sites a 3 Part Series - October 30, November 6 and 13, 2018. The newly updated LNAPLs (Light Non-Aqueous Phase Liquids) 3-part training course series is based on the ITRC guidance: LNAPL Site Management: LCSM Evolution, Decision Process, and Remedial Technologies (LNAPL-3, 2018) and focuses on connecting the science to managing LNAPL sites and helping you: build upon your understanding of LNAPL behavior in the subsurface (Part 1), develop your LNAPL conceptual site model and LNAPL remedial goals (Part 2), and select/implement LNAPL technologies (Part 3). After this training series, the expectation is that you will have the skills and understanding to use ITRC science-based resources to improve decision making at your LNAPL sites. For regulators and other government agency staff, this improved understanding can hopefully be incorporated into your own LNAPL programs. It is expected that participants will attend this 3-part training series in sequence. For more information and to register, see <https://www.itrcweb.org> or <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.

Programmed Calculators for Dioxin Toxicity Equivalence (TEQ), Sponsor EPA Office of Superfund Remediation and Technology Innovation, Archive of February 20, 2014 and February 27, 2014 (2 hours). This archived webinar provides a description of two publicly available macro-driven spreadsheets that calculate dioxin toxicity equivalence (TEQ) from congener results: an Advanced TEQ Calculator and a Basic TEQ Calculator. Two types of Excel-based calculators are available for calculating TEQ for the relevant dioxin, furan, and dioxin-like PCB (polychlorinated biphenyl) congeners in soil or water samples. The Advanced TEQ Calculator provides a "sensitivity analysis" that allows the user to see what effect different options for handling non-detected and rejected congener data have on a sample's TEQ value. For more information on the calculators, visit <https://www.epa.gov/superfund/risk-assessment-dioxin-superfund-sites#teqsteps>. To replay the archived webinar, visit <https://clu-in.org/conf/in/teq/>.

> New Documents and Web Resources

Updated 1,4-Dioxane Focus Area. The CLU-IN 1,4-Dioxane Focus Area has been updated to reflect the current state of the science, with an emphasis on the behavior, occurrence, site characterization and analytical methods, and treatment technologies sections. View and use at <https://clu-in.org/dioxane>.

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:

- Sand Coulee Acid Mine Drainage Source Control: Abandoned Mine Reclamation Project, Cascade County, Montana
- Reclamation of Ohio Coal Mine Sites Using FGD Byproducts: Phase III Demonstration Projects
- Water Quality Prediction of Mining Waste Facilities Based on Predictive Models
- The MnDRIVE Transdisciplinary Project Implementation of Smart Bioremediation Technology to Reduce Sulfate Concentrations in NE Minnesota Watersheds
- Making Abandoned Mine Lands (AML) Profitable: Workshop Proceedings and Abstracts
- In Situ Analytical Characterization of Contaminated Sites Using Nuclear Spectrometry Techniques: Review of Methodologies and Measurements
- Technical Memorandum: FT007 ISCR Mitigation Injection Round 1
- Interim Measures Remedial Design Report, Former Schlage Lock Facility, 213 Red Iron Road, Rocky Mount, North Carolina
- Validation of Biotechnology for Quantifying the Abundance and Activity of Vinyl-Chloride Oxidizers in Contaminated Groundwater: Guidance Document
- Assessment of Post Remediation Performance of a Biobarrier Oxygen Injection System at a Methyl tert-Butyl Ether (MTBE)-Contaminated Site, Marine Corps Base Camp Pendleton, San Diego, California
- Long-Term Performance Assessment at a Highly Characterized and Instrumented DNAPL Source Area Following Bioaugmentation: ESTCP Cost and Performance Report
- Sustained In Situ Chemical Oxidation (ISCO) of 1,4-Dioxane and Chlorinated VOCs Using Slow-Release Chemical Oxidant Cylinders
- Electrokinetic-Enhanced (EK-ENHANCED) Amendment Delivery for Remediation of Low Permeability and Heterogeneous Materials
- Advances in the State of the Practice for Enhanced In Situ Bioremediation
- Treatment Wetlands

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 18 resources, events, projects and news items were added to EUGRIS in September 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 resources were posted on EUGRIS:

A Verification Approach for Monitoring and Remediation Technologies in Soil and Groundwater Systems. The PROMOTE Consortium provided a verification procedure, tailored to its specific technology sector along with first reference reports on verified technologies. The document also includes recommendations for a European ETV system, based on communication with stakeholders and several pilot verifications and highlights a CEN Workshop Agreement on verification of site characterisation, monitoring and remediation technologies for soil and groundwater. View or download at http://www.eugris.info/downloads/EC%20Promote_final_brochure_final.pdf

Advances in the State of the Practice for Enhanced In Situ Bioremediation (TR-NAVFAC EXWC-EV-1806). Naval Facilities Engineering Command prepared this report in February 2018. Enhanced in situ bioremediation (EISB) is an engineered technology that introduces physical, chemical, and biological changes to the aquifer to create the conditions necessary for microorganisms to transform contaminants of concern to innocuous byproducts. Recent innovations and trends to facilitate successful application are introduced. While this document discusses current industry-accepted best practices to design and apply EISB with a primary focus on chlorinated ethene remediation, it also discusses progress in identifying microorganisms capable of degrading 1,4-dioxane. View or download at

https://www.navy.mil/content/dam/naefac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/e/EISB-Advances-Final-022018.docx.pdf

> Conferences and Symposia

Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management, Seattle (area), WA, October 10-11, 2018. This 2-day ITRC classroom training is based on the ITRC Technical and Regulatory Guidance Web-Based Document, Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management (PVI-1, 2014) and led by internationally recognized experts. Within the training class, participants will hear about EPA's Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites (June 2015). The ITRC guidance document and EPA guide are complementary documents with the ITRC training course providing the "how-to" knowledge and skills for screening, investigating, and managing the petroleum vapor intrusion pathway. The class will enable you to develop the skills to screen-out petroleum sites based on the scientifically-supported ITRC strategy and checklist; focus the limited resources investigating those PVI sites that truly represent an unacceptable risk; and communicate ITRC PVI strategy and justify science-based decisions to management, clients, and the public. Interactive learning with classroom exercises and Q&A sessions will reinforce these course learning objectives. For local, state, and federal government; students; community stakeholders; and tribal representatives, ITRC has a limited number of fee waivers available. For more information and to register, see <http://www.itrcweb.org/training>.

Registration Now Open! 3rd Western Symposium Design and Construction Issues at Hazardous Waste Sites, Denver, CO, November 5-7, 2018. This event is designed 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 goal of this symposium 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.samedmp.org/dcbws-west>.

Best Practices for Site Characterization Throughout the Remediation Process, Boston, MA, December 3-6, 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>.

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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