



TechDirect, December 1, 2015

Welcome to TechDirect! Since the November 1 message, TechDirect gained 173 new subscribers for a total of 35,486. 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.

> Funding Opportunities

2015 Technical Assistance to Brownfields Communities (TAB) Grants. These grants may be used to provide technical assistance to communities through the Technical Assistance to Brownfield Communities (TAB) grant program. The EPA anticipates awarding 11 TAB cooperative agreement(s) - one grant providing technical assistance to communities in each EPA region and an eleventh grant covering communities across the entire nation. Grants awarded under the TAB announcement will help communities tackle the challenge of assessing, cleaning up and preparing brownfields sites for redevelopment, especially underserved/rural/small and otherwise distressed communities. Those applying for TAB grant funds must provide technical assistance to all communities within the geographic area they are applying. Separate applications may be submitted for multiple geographic areas. The proposal deadline is December 21, 2015. For more information and guidelines, see

<http://www2.epa.gov/brownfields/2015-tab-solicitation>.

FY 2017 Environmental Research and Development Program (SERDP)

Solicitations. The Department of Defense's Strategic Environmental Research and Development Program (SERDP) is seeking environmental research and development proposals for funding beginning in FY 2017. 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 Climate Change (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 \$200,000 and projects are approximately one year

in duration. This year, SERDP is requesting SEED proposals for the RC and WP program areas. All Core pre-proposals are due January 7, 2016. SEED proposals are due March 8, 2016. Details for both federal and non-federal submissions are available at <https://www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations>.

> Upcoming Live Internet Seminars

SRP Funding Opportunities Web Seminar - December 1, 2015, 1:00PM-2:00PM EST (18:00-19:00 GMT). The SRP will be holding a web seminar to provide information about the new "Superfund Hazardous Substance Research and Training Program (P42)" funding opportunity, RFA-ES-15-019 (<http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-15-019.html>). Focus will be on the multi-project center grant announcement, including an emphasis on changes compared to previous solicitations. Participants will have an opportunity to ask questions. For more information and to register, see <https://clu-in.org/live>.

Screening, Testing, and Application of Residuals and Byproducts for Remediation - December 2, 2015, 1:00PM-3:00PM EST (18:00-20:00 GMT). This webinar will discuss the use of coal combustion products for soil remediation at mining sites, as well as discuss recent research on screening and testing residuals, such as waste lime, gypsum, and paper mill sludge, for application on contaminated lands. Presentations will include case study data and findings that are supported by publications available from the presenter and collaborators' website www.landrehab.org. A previous, related CLU-IN mining webinar on Using Biosolids and Coal Combustion Products for Soil Remediation at Mining Sites was presented on July 24, 2014 and is archived at <https://clu-in.org/live/archive>. For more information and to register, see <https://clu-in.org/live>.

SERDP & ESTCP Emerging Contaminants: DoD Overview and State of Knowledge on Fluorochemicals and 1,4-Dioxane - December 3, 2015, 12:00PM EST (17:00 GMT). Join SERDP and ESTCP for three presentations highlighting Department of Defense (DoD) efforts on prioritizing, detecting, and treating emerging contaminants. First, Mr. Paul Yaroschak from the Office of the Assistant Secretary of Defense (Energy, Installations and Environment) will provide an overview of DoD's Emerging Contaminants (ECs) Program including the nature of risks posed by ECs and DoD's various initiatives to proactively manage these risks. Second, Dr. Jennifer Field from Oregon State University will talk about the occurrence of a class of emerging contaminants called PFAS (per- and polyfluoroalkyl substances) in groundwater at military installations in the United States. Finally, Dr. Patrick Evans from CDM Smith will discuss the results of a recently funded ESTCP project on the treatment of 1,4-dioxane using sustained slow release chemical oxidant cylinders. For more information and to register, see please visit <https://serdp-estcp.org/Tools-and-Training/Webinar-Series/12-03-2015>.

ITRC Issues and Options in Human Health Risk Assessment - A Resource When Alternatives to Default Parameters and Scenarios are Proposed - December 3, 2015, 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 <http://www.itrcweb.org> or <http://clu-in.org/live>.

ITRC Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management - December 4, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).

Chemical contaminants in soil and groundwater can volatilize into soil gas and migrate through unsaturated soils of the vadose zone. Vapor intrusion (VI) occurs when these vapors migrate upward into overlying buildings through cracks and gaps in the building floors, foundations, and utility conduits, and contaminate indoor air. If present at sufficiently high concentrations, these vapors may present a threat to the health and safety of building occupants. Petroleum vapor intrusion (PVI) is a subset of VI and is the process by which volatile petroleum hydrocarbons (PHCs) released as vapors from light nonaqueous phase liquids (LNAPL), petroleum-contaminated soils, or petroleum-contaminated groundwater migrate through the vadose zone and into overlying buildings. The ITRC Technical and Regulatory Guidance Web-Based Document, Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management (PVI-1, 2014) and this associated Internet-based training provides regulators and practitioners with consensus information based on empirical data and recent research to support PVI decision making under different regulatory frameworks. The PVI assessment strategy described in this guidance document enables confident decision making that protects human health for various types of petroleum sites and multiple PHC compounds. This guidance provides a comprehensive methodology for screening, investigating, and managing potential PVI sites and is intended to promote the efficient use of resources and increase confidence in decision making when evaluating the potential for vapor intrusion at petroleum-contaminated sites. By using the ITRC guidance document, the vapor intrusion pathway can be eliminated from further investigation at many sites where soil or groundwater is contaminated with petroleum hydrocarbons or where LNAPL is present. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

ITRC Biochemical Reactors for Treating Mining Influenced Water - December 7, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).

Mining influenced water (MIW) includes aqueous wastes generated by ore extraction and processing, as well as mine drainage and tailings runoff. MIW handling, storage, and disposal is a major environmental problem in mining districts throughout the U.S. and around the world. Biochemical reactors (BCRs) are engineered treatment systems that use an organic substrate to drive microbial and chemical reactions to reduce concentrations of metals, acidity, and sulfate in MIWs. The ITRC Biochemical Reactors for Mining-Influenced Water technology guidance (BCR-1, 2013) and this associated Internet-based training provide an in-depth examination of BCRs; a decision framework to assess the applicability of BCRs; details on testing, designing, constructing and monitoring BCRs; and real world BCR case studies with diverse site conditions and chemical mixtures. At the end of this training, you should be able to complete the following activities: describe a BCR and how it works; identify when a BCR is applicable to a site; use the ITRC guidance for decision-making by applying the decision framework; improve site decision-making through understanding of BCR advantages, limitations, reasonable expectations, regulatory and other challenges; and navigate the ITRC Biochemical Reactors for Mining-Influenced Water technology guidance (BCR-1, 2013). For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

ITRC Groundwater Statistics for Environmental Project Managers - December 8, 2015, 1:00PM-3:15PM EST (18:00-20:15 GMT).

Statistical techniques may be used throughout the process of cleaning up contaminated groundwater. It is challenging for practitioners, who are not experts in statistics, to interpret, and use statistical

techniques. ITRC developed the Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) and this associated training specifically for environmental project managers who review or use statistical calculations for reports, who make recommendations or decisions based on statistics, or who need to demonstrate compliance for groundwater projects. The training class will encourage and support project managers and others who are not statisticians to: use the ITRC Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) to make better decisions for projects; apply key aspects of the statistical approach to groundwater data; and answer common questions on background, compliance, trend analysis, and monitoring optimization. ITRC's Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) and this associated training bring clarity to the planning, implementation, and communication of groundwater statistical methods and should lead to greater confidence and transparency in the use of groundwater statistics for site management. For more information and to register, see <http://www.itrcweb.org> or <https://clu-in.org/live>.

ITRC Integrated DNAPL Site Characterization - December 9, 2015, 1:00PM-3:30PM EST (18:00-20:30 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 <http://www.itrcweb.org> or <http://clu-in.org/live>.

> New Documents and Web Resources

Technology News and Trends (EPA 542-N-14-006). This issue highlights investigation and mitigation of vapor intrusion at or near contaminated sites, with a focus on summarizing how vapor intrusion was addressed at three sites where response actions are underway. Vapor intrusion is the general term given to migration of hazardous vapors from any subsurface vapor source, such as contaminated soil or groundwater, through the soil and into an overlying building or structure. A wide variety of chemical contaminants can give off vapors, which can migrate towards and enter buildings or other enclosed spaces. These vapors can enter buildings through cracks in basements and foundations, as well as through conduits and other openings in the building envelope. Vapor intrusion is a potential human exposure pathway - a way that people may come into contact with hazardous vapors while performing their day-to-day indoor activities. Depending upon building- and site-specific circumstances, indoor concentrations of chemical vapors arising from the vapor intrusion pathway may threaten human health or safety. When human health or safety is threatened by vapor intrusion, response action is warranted (Summer 2015). View at <https://clu-in.org/tandt/0815>.

Ground Water Technical Considerations during the Five-Year Review Process (EPA 542-F-15-010). This issue paper has been developed to highlight technical considerations as well as technical resources available to Remedial Project Managers (RPMs) in conducting Five-Year Reviews (FYRs) at CERCLA sites with contaminated groundwater. While it has been developed with the needs of the U.S. Environmental Protection Agency's (EPA) RPMs in mind, it may also be helpful to other federal and state agencies that have the lead for conducting FYRs and may assist EPA staff in reviewing those FYRs (April 2015, 27 pages). View or download at <http://www2.epa.gov/remedytech/ground-water-technical-considerations-during-five-year-review-process>.

Superfund Research Program Research Brief 251: Development of a Sustainable Remediation System to Remove TCE from Groundwater. An electrochemical system can effectively remove trichloroethylene (TCE) from groundwater at high flow rates, as demonstrated by researchers at the Northeastern University Superfund Research Program (SRP) Center. They optimized the electrode material and configuration to determine the best conditions to dechlorinate TCE at a flow rate of one liter per minute, which exists in karst aquifers. The research team, led by Akram Alshawabkeh, Ph.D., is developing novel solar-powered technologies for remediation of contaminated groundwater, particularly in karst systems. For more information, see http://tools.niehs.nih.gov/srp/researchbriefs/view.cfm?Brief_ID=251. To get monthly updates on research advances from the SRP you can subscribe to their Research Brief mailing list at <https://list.nih.gov/cgi-bin/wa.exe?SUBED1=SRP-BRIEF&A=1>.

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:

- Demonstration of a Fractured Rock Geophysical Toolbox (FRGT) for Characterization and Monitoring of DNAPL Biodegradation in Fractured Rock Aquifers
- Evaluation of Perchlorate Sources in the Rialto-Colton and Chino California Subbasins Using Chlorine and Oxygen Isotope Ratio Analysis
- Biogeochemical Transformation Handbook
- Sustainable Sediment Remediation
- Dredging and Dredged Material Management: Engineering and Design
- Adsorption Design Guide
- In Situ Thermal Treatment Completion Report, Frontier Fertilizer Superfund Site
- Developing Conceptual Models for Assessing Climate Change Impacts to Contaminant Availability in Terrestrial Ecosystems
- Delineating Groundwater-Surface Water Interaction
- Dual C-Cl Isotope Analysis to Distinguish Processes Affecting Chlorinated Ethenes at Field Scale
- Characterization, Modeling, Monitoring, and Remediation of Fractured Rock
- Stabilization and Solidification of Contaminated Soil and Waste: A Manual of Practice

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 20 resources, events, projects and news items were added to EUGRIS in November. 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:

AquaConsoil Copenhagen 2015 Proceedings Now Available. About 100 papers of

AquaConSoil 2015 authors both of oral as of poster presentations have been submitted and now all files have been summarized for download. View or download at http://www.aquaconsoil.org/assets/aquaconsoil_proceedings_2015.pdf

> Conferences and Symposia

Groundwater High-Resolution Site Characterization (HRSC), Atlanta, GA, December 10-11, 2015. 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>.

Best Practices for Site Characterization Throughout the Remediation Process, San Francisco, CA, January 26-28, 2016. 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/BPSCR>.

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 Jeff Heimerman at (703) 603-7191 or heimerman.jeff@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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