

TechDirect, February 1, 2014

Welcome to TechDirect! Since the January 1 message, TechDirect gained 400 new subscribers for a total of 36,470. If you feel the service is valuable, please share TechDirect with your colleagues. Anyone interested in subscribing may do so on CLU-IN at <http://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

CEC Hazard Ranking System (HRS) Webinar Series - March 10, 18, 20, 25, 27, April 1, 3, 8, 10. The CERCLA Education Center (CEC) is offering another Hazard Ranking System Webinar Series in March and April 2014 and has expanded the course from six to nine modules. The HRS webinar series is an intermediate-level course designed for personnel who are required to compile, draft and review preliminary assessments (PA), site inspections (SI), and HRS documentation records/packages submitted for proposal to the National Priorities List (NPL). **The course is intended for EPA Regional, state, tribal and contractor personnel, who support EPA in the Superfund site assessment/NPL listing process.** This course assumes a basic understanding of the HRS and its context within the site assessment process. The training course is intended to enable staff to prepare HRS packages for the NPL and to plan PAs and SIs to address future HRS scoring issues. This training course provides details of the structure and application of the revised HRS and information related to the preparation of HRS packages, including HRS scoresheets, documentation records and site summaries. The course will incorporate an interactive case study for each of the four pathways to provide practical application of the HRS. The webinar series consists of nine two- to three-hour sessions during March and April 2014. In order to receive credit for taking the course, participants must participate in each session. If you are unable to make one of the sessions, archived versions will be made available at www.clu-in.org that you can take to receive credit for the missed live session. In order to receive credit for a missed session, you must complete the missed session within 2 months of the originally scheduled date and submit an evaluation form from that archived module. For more information and to register, see <http://clu-in.org/live> .

Military Munitions Support Services - MMRP Objectives - DQOs & RAOs - February 4, 2014, 1:00PM-4:45PM EST (18:00-21:45 GMT). This is one of the monthly webinar sessions for the Military Munitions Support Services (M2S2) community. During this session, speakers will make presentations on a variety of topics relative to development of high quality Data Quality Objectives and Remedial Action Objectives for munitions projects. For more information and to register, see <http://clu-in.org/live> .

ITRC Biochemical Reactors for Treating Mining Influenced Water - February 6, 2014, 11:00AM-1:15PM EST (16:00-18:15 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> .

Using GIS Tools to Analyze, Compute, and Predict Pollution, Session I - Exposure Assessment in the Field and links to Human Health - February 6, 2014, 2:00PM-4:00PM EST (19:00-21:00 GMT). Preterm birth, the leading cause of neonatal mortality in the U.S., may be associated with exposure to legacy and emergent contaminants in the environment. Puerto Rico has one of the highest rates of preterm birth, as well as density of Superfund Sites in the United States. As part of NIEHS's Superfund Research Program, the Puerto Rico Testsite for Exploring Contamination Threats (PROTECT) is exploring the relationships between exposure to hazardous chemicals and preterm birth in northern Puerto Rico. Particular attention is given to chlorinated volatile organic compounds and phthalates, although biomarkers of phenols, metals, and parabens exposure are also being explored as precursors of preterm birth. Identification of associations between contaminants and preterm birth requires collection and integration of complex multi-disciplinary datasets. The first presentation will describe the data management system being developed by PROTECT to integrate, manage, analyze, and relate environmental, demographic, exposure biomarkers, and birth outcome data. The discussion will center on the applicability of the system, built on a foundation of Earthsoft's EQUIS(R), to assess the extent of groundwater and tap water contamination, identify other modes of exposure, define patterns in biomarkers of exposure and birth outcomes from an ongoing birth cohort, perform relational queries, and map spatial patterns that can be directly visualized with ArcGIS. Toxic metals are widespread environmental contaminants that are known human carcinogens and/or developmental toxicants. The levels of metals in private well water are federally unregulated. The second presenter will describe two studies that used GIS mapping in North Carolina to examine 1) the spatial patterns of arsenic levels private wells, and 2) the association between private well levels of arsenic, cadmium, manganese, and lead and birth defects prevalence. The studies used a statewide database of private well contaminants collected by the North Carolina Department of Health and Human Services Division of Public Health as well as data from the North Carolina Birth Defects Monitoring Program. For more information and to register, see <http://clu-in.org/live> .

ITRC Soil Sampling and Decision Making Using Incremental Sampling Methodology Parts 1 and 2 - February 11 and 13, 2014. This 2-part training course along with ITRC's web-based Incremental Sampling Methodology Technical and Regulatory Guidance Document (ISM-1, 2012) is intended to assist regulators and practitioners with the understanding the fundamental concepts of soil/contaminant heterogeneity, representative sampling, sampling/laboratory error and how ISM addresses these concepts. Through this training course you should learn: basic principles to improve soil sampling results, systematic planning steps important to ISM,

how to determine ISM Decision Units (DU), the answers to common questions about ISM sampling design and data analysis, methods to collect and analyze ISM soil samples, the impact of laboratory processing on soil samples, and how to evaluate ISM data and make decisions. In addition this ISM training and guidance provides insight on when and how to apply ISM at a contaminated site, and will aid in developing or reviewing project documents incorporating ISM (e.g., work plans, sampling plans, reports). For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live> .

Area-Wide Planning, Superfund Sites, Environmental Justice and Green Infrastructure: Tying it All Together in the Freeport Community Planning Project - February 13, 2014, 2:30PM-4:30PM EST (19:30-21:30 GMT). The economic vitality and the quality of neighborhood housing of the East Side neighborhood of Freeport, Illinois, have been severely impacted over time by the neighborhood's location in the Pecatonica River floodway. In addition, this environmental justice community has suffered from the legacy of racial segregation, strained relationships with civic leadership and diminished access to community amenities. EPA's Superfund Redevelopment Initiative (SRI) selected the East Side neighborhood to receive support after an initial meeting regarding the CMC Heartland Superfund site in which City staff identified flood impacts and strained relationships as key challenges to community revitalization. Designed with the goal of mending and rebuilding the relationship between the City of Freeport and East Side residents, the resulting community engagement and planning project has become a shining example of a community-specific SRI area-wide planning project. This webinar will provide an in-depth look at the project and include topics such as restoring strained relationships between environmental justice communities and government agencies, reusing contaminated areas to improve neighborhood quality of life, and developing green and grey infrastructure strategies to reduce flood impacts on residential areas. For more information and to register, see <http://clu-in.org/live> .

ITRC Green & Sustainable Remediation - February 20, 2014, 11:00AM-1:15PM EST (16:00-18:15 GMT). Many state and federal agencies are just beginning to assess and apply green and sustainable remediation (GSR) into their regulatory programs. This training provides background on GSR concepts, a scalable and flexible framework and metrics, tools and resources to conduct GSR evaluations on remedial projects. The training is based on the ITRC's Technical & Regulatory Guidance Document: Green and Sustainable Remediation: A Practical Framework (GSR-2, 2011) as well as ITRC's Overview Document, Green and Sustainable Remediation: State of the Science and Practice (GSR-1, 2011). Beyond basic GSR principles and definitions, participants will learn the potential benefits of incorporating GSR into their projects; when and how to incorporate GSR within a project's life cycle; and how to perform a GSR evaluation using appropriate tools. In addition, a variety of case studies will demonstrate the application of GSR and the results. The training course provides an important primer for both organizations initiating GSR programs as well as those organizations seeking to incorporate GSR considerations into existing regulatory guidance. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live> .

Why Are So Many Groundwater Contaminant Plumes Persistent? Insights from Modeling and Characterization - February 24, 2014, 1:00PM-3:00PM EST (18:00-20:00 GMT). This two-part seminar will feature Dr. Graham Fogg of the University of California Davis Superfund Research Program (SRP) and Dr. Mark Brusseau from the University of Arizona SRP and will focus on groundwater remediation issues. Contamination of groundwater by chemicals used in industrial, commercial, and other applications continues to pose significant threats to human health and the environment. Due to the complex characteristics of the subsurface and contaminants, site remediation is often an elusive goal. Dr. Graham Fogg will cover research on groundwater transport models that aim to improve our understanding of subsurface conditions and make elusive groundwater remediation more effective.

Recent research shows how reliance on conceptual site models can lead to mischaracterization of not only the plume, but also remediation success and natural attenuation. Development of improved tools and methods will be discussed. Dr. Mark Brusseau will discuss his research on the primary transport characteristics of persistent groundwater contaminant plumes, with illustration via case study. Methods for characterizing persistent mass discharge will also be discussed. For more information and to register, see <http://clu-in.org/live> .

Military Munitions Support Services - Munitions Classification - February 25, 2014, 1:00PM-4:45PM EST (18:00-21:45 GMT). This is one of the monthly webinar sessions for the Military Munitions Support Services (M2S2) community. During this session, speakers will make presentations on a variety of topics relative to advanced geophysics classification for munitions response projects. For more information and to register, see <http://clu-in.org/live> .

ITRC Groundwater Statistics for Environmental Project Managers - February 27, 2014, 11:00AM-1:15PM EST (16:00-18:15 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 <http://clu-in.org/live> .

ITRC LNAPL Training Parts 1, 2, and 3 - March 4, 6, 11. Light non-aqueous phase liquids (LNAPLs) are organic liquids such as gasoline, diesel, and other petroleum hydrocarbon products that are immiscible with water and less dense than water. LNAPLs are important because they are present in the subsurface at thousands of remediation sites across the country, and are frequently the focus of assessment and remediation efforts. Part 1 of this training course explains how LNAPLs behave in the subsurface and examines what controls their behavior. Part 1 also explains what LNAPL data can tell you about the LNAPL and site conditions. Relevant and practical examples are used to illustrate key concepts. Part 2 addresses LNAPL characterization and site conceptual model development as well as LNAPL recovery evaluation and remedial considerations. Specifically, Part 2 discusses key LNAPL and site data, when and why those data may be important, and how to get those data. Part 2 also discusses how to evaluate LNAPL recoverability. Part 3 uses the LNAPL conceptual site model (LCSM) approach to identify the LNAPL concerns or risks and set proper LNAPL remedial objectives and technology-specific remediation goals and performance metrics. Part 3 also provides an overview of the LNAPL remedial technology selection framework. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live> .

> New Documents and Web Resources

ASTM Standard Guide for Greener Cleanups (E2893-13). EPA representatives worked with ASTM International, a standard developing organization, to develop a standard guide intended to encourage property owners, regulatory agencies, responsible parties, developers, and communities to voluntarily use greener practices for contaminated site cleanup. In November 2013, ASTM released the resulting consensus-based "Standard Guide for Greener Cleanups." The guide describes a process for identifying, evaluating, and incorporating best management practices and, when appropriate, integrating a quantitative evaluation of the environmental footprint of cleanup activities. A December memorandum from EPA's Office of Solid Waste and Emergency Response (OSWER) Assistant Administrator to regional administrators and OSWER office directors recognizes the standard as a tool that, when implemented appropriately, can reduce the environmental footprint of cleanup activities while still meeting site-specific regulatory requirements and objectives. For more information about and to purchase the standard, visit <http://www.astm.org/Standards/E2893.htm>. To view or download the OSWER memorandum, visit

http://www.epa.gov/oswer/greenercleanups/pdfs/oswer-aa-gc-memo_december-2013.pdf.

Optimization Review: State Road 114 Ground Water Plume Superfund Site (Ground Water Treatment System and Soil Vapor Extraction System), Levelland, Hockley County, Texas (EPA 540-R-013-018). This report provides information about the optimization review conducted at the State Road 114 Ground Water Plume Superfund Site in the City of Levelland in Hockley County, Texas. An optimization review considers the goals of the remedy, available site data, conceptual site model (CSM), remedy performance, protectiveness, cost-effectiveness and closure strategy. A strong interest in sustainability has also developed in the private sector and within federal, state, and municipal governments. Consistent with this interest, optimization now routinely considers green remediation and environmental footprint reduction during optimization reviews. This groundwater plume site contains the primary contaminants 1,2-dichloroethane and benzene. The source of the groundwater contamination is a former petroleum products refinery that operated between 1939 and 1954. The groundwater remedy consists of a groundwater treatment system and a soil vapor extraction system (December 2013, 69 pages). View or download at

<http://clu-in.org/techpubs.htm> .

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 <http://clu-in.org/products/tins/> . The following resources were included in recent issues:

- Determining Source Attenuation History to Support Closure by Natural Attenuation
- Critical Aspects of EPA's IRIS Assessment of Inorganic Arsenic: Interim Report
- Cost Increases and Delays Occurred during Closure and Land Transfers of Army Ammunition Plants and Chemical Depots under Base Realignment and Closure 2005
- Climate Change Adaptation in the Superfund Program: Groundwater Remediation Systems
- Parallel In Situ Screening of Remediation Strategies for Improved Decision Making, Remedial Design, and Cost Savings
- Environmental Technology Innovation Clusters

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 6 resources, events, projects and

news items were added to EUGRIS in January. 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:

Removal of Support for Local Authorities in England for Orphan Sites (2014).

Several articles highlight international contaminated lands and lack of funds to characterize and remediate them. View at

<http://www.eugris.info/whatsnew.asp?pop=&StartYear=2014&Date=Jan>

> Conferences and Symposia

LNAPLs: Science, Management, and Technology - ITRC 2-day Classroom Training offered three times in 2014: Kansas City, MO (April 1-2); Lexington, KY (June 3-4); and Richmond, VA (October 29-30). Led by internationally recognized experts, this 2-day ITRC classroom training will enable you to develop and apply an LNAPL Conceptual Site Model (LCSM), understand and assess LNAPL subsurface behavior, develop and justify LNAPL remedial objectives including maximum extent practicable considerations, select appropriate LNAPL remedial technologies and measure progress, and use ITRC's science-based LNAPL guidance to efficiently move sites to closure. 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 scholarships (waiver of registration fee only) available. For more information and to register, see <http://www.itrcweb.org/training> .

ITRC 2014 Spring Meeting, Garden Grove, CA, March 24-28, 2014. Online registration is now open for the 2014 Interstate Technology & Regulatory Council (ITRC) Spring Meeting - March 24-28, 2014 in Garden Grove, CA. The 2014 Spring Meeting will offer environmental professionals from across the country an opportunity to network and collaborate on innovative approaches to solving environmental challenges. This week-long meeting will feature an informative plenary session, two project implementation sessions, as well as ITRC team meetings. In addition, this meeting provides an opportunity for you to: expand your network in the environmental community through participation in the Tuesday evening reception and other networking opportunities provided throughout the meeting, understand ITRC's direction through discussions with ITRC's leadership during the Wednesday morning Plenary Session, and engage with ITRC project teams during implementation sessions enabling members to discover more about innovative strategies teams are pursuing for 2014 and beyond. For more information and to register, see <http://www.itrcweb.org/Meetings/Upcoming> .

Call for Abstracts!! 3rd International Conference on Sustainable Remediation 2014, Ferrara, Italy, September 17-19, 2014. This conference will focus on five topics concerning sustainable remediation: conceptual framing; tools, metrics and indicators; greening remediation, eco-efficient technologies and opportunities from synergy; case studies; and stakeholder involvement and participative approaches. Abstracts for presentations and posters may be submitted electronically at <http://www.sustrem2014.com/mail.php> through April 25, 2014. For more information, visit <http://www.sustrem2014.com/> .

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 <http://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 <http://clu-in.org/techdirect> at any time night or day.

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