TechDirect, December 1, 2014

Welcome to TechDirect! Since the November 1 message, TechDirect gained 422 new subscribers for a total of 38,305. 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.

> Thank You

Thank you for being one of the over 38,000 subscribers to the TechDirect newsletter!

As a result of your interests, in the past Fiscal Year the Clean Up Information Network (CLU-IN)

- received over 2.5 million site visits
- distributed over 700,000 documents downloads
- hosted more than 120 Internet seminars attended by more than 20,000 live participants
- offered nearly 750,000 views/downloads of CLU-IN archived internet seminars

We welcome your continued input on resources and information shared through the Clean-Up Information Network. If you have comments or suggestions, please share them with us http://www.clu-in.org/contact/.

> Upcoming Live Internet Seminars

Porewater Concentrations and Bioavailability: How You Can Measure Them and Why They Influence Contaminated Sediment Remediation - Sessions III and IV - December 1 and 15, 2014. NARPM Presents and Risk e-Learning are offering a four-part webinar series to help you understand why, how, and when to measure porewater concentrations and bioavailability as part of contaminated sediment assessment and management. Hosted jointly by the EPA Contaminated Sediments Forum and the National Institute of Environmental Health Science's Superfund Research Program, this webinar series will also focus on the use of passive sampling devices (PSD) and what they tell us about contaminant bioavailability. Previously held as a course at the National Association for Remedial Project Managers (NARPM) Training Program meeting, the webinar series features experts in the field of porewater and bioavailability and includes lectures and case studies, including practical tips to maximize the utility of porewater and bioavailability measurements. Presenters will explain the basics of chemical fate, transport, and uptake, with a focus on porewater as a key route of exposure and a strong indicator of bioavailability. PSDs are a promising

technology for measuring porewater concentrations and assessing bioavailability, particularly for common sediment contaminants such as polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), chlorinated pesticides, and dioxin-like compounds. The webinar series will include information about direct measurements of porewater, such as centrifuging sediment samples or Henry Samplers, which may also be used and are particularly useful for measuring metals. For more information and to register, see http://clu-in.org/live.

ITRC Integrated DNAPL Site Strategy - December 2, 2014, 2:00PM-4:15PM EST (19:00-21:15 GMT). The ITRC Integrated Dense Nonaqueous Phase Liquid Site Strategy (IDSS-1, 2011) technical and regulatory guidance document will assist site managers in development of an integrated site remedial strategy. This course highlights five important features of an IDSS including: a conceptual site model (CSM) that is based on reliable characterization and an understanding of the subsurface conditions that control contaminant transport, reactivity, and distribution; remedial objectives and performance metrics that are clear, concise, and measurable; treatment technologies applied to optimize performance and take advantage of potential synergistic effects; monitoring based on interim and final cleanup objectives, the selected treatment technology and approach, and remedial performance goals; and reevaluating the strategy repeatedly and even modifying the approach when objectives are not being met or when alternative methods offer similar or better outcomes at lower cost. For more information and to register, see http://www.itrcweb.org or http://clu-in.org/live.

ITRC Mining Waste Treatment Technology Selection - December 4, 2014, 11:00AM-1:15PM EST (16:00-18:15 GMT). ITRC's Mining Waste Team developed the ITRC Web-based Mining Waste Technology Selection site to assist project managers in selecting an applicable technology, or suite of technologies, which can be used to remediate mine waste contaminated sites. Decision trees, through a series of questions, guide users to a set of treatment technologies that may be applicable to that particular site situation. Each technology is described, along with a summary of the applicability, advantages, limitations, performance, stakeholder and regulatory considerations, and lessons learned. Each technology overview links to case studies where the technology has been implemented. In this associated Internet-based training, instructors provide background information then take participants through the decision tree using example sites. Project managers, regulators, site owners, and community stakeholders should attend this training class to learn how to use the ITRC Web-based Mining Waste Technology Selection site to identify appropriate technologies, address all impacted media, access case studies, and understand potential regulatory constraints. 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 9, 2014, 2:00PM-4:15PM EST (19:00-21:15 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.

Military Munitions Support Services - Munitions Constituents - December 10, 2014, 1:00PM-4:30PM EST (18:00-21:30 GMT). This will be a Military Munitions Support Services seminar with subject matter experts discussing the latest developments in munitions constituents. For more information and to register, see http://clu-in.org/live.

ITRC Remedy Selection for Contaminated Sediments - December 11, 2014, 11:00AM-1:15PM EST (16:00-18:15 GMT). ITRC developed the technical and regulatory guidance, Remedy Selection for Contaminated Sediments (CS-2, 2014), to assist decision-makers in identifying which contaminated sediment management technology is most favorable based on an evaluation of site specific physical, sediment, contaminant, and land and waterway use characteristics. The document provides a remedial selection framework to help identify favorable technologies, and identifies additional factors (feasibility, cost, stakeholder concerns, and others) that need to be considered as part of the remedy selection process. This ITRC training course supports participants with applying the technical and regulatory guidance as a tool to overcome the remedial challenges posed by contaminated sediment sites. Participants learn how to: identify site-specific characteristics and data needed for site decision making, evaluate potential technologies based on site information, and select the most favorable contaminant management technology for their site. 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 16, 2014, 2:00PM-4:15PM EST (19:00-21:15 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.

Water Treatment: Iron Mountain Mine and Bunker Hill Mining and Metallurgical Complex Superfund Sites - December 17, 2014, 1:00PM-3:00PM EST (18:00-20:00 GMT). This webinar features three presentations on mining-influenced water (MIW) treatment delivered at the 2014 National Conference on Mining Influenced Waters. The session focuses on approaches to MIW treatment, operations and maintenance (O&M) challenges, and characterization and remediation of MIW treatment issues at two Superfund sites. For more information and to register, see http://clu-in.org/live.

> New Documents and Web Resources

Technology News and Trends (EPA 542-N-14-003). This issue highlights characterization and remediation strategies for contaminated sediment, which impairs the uses of many water bodies and is often a contributing factor to the thousands of fish consumption advisories that have been issued nationwide. As of December 2012, remedies for 70 large sediment sites were selected under the Superfund program and Superfund evaluation was underway for another 50 sites. Difficulties in contaminated sediment cleanup are often associated with the variability of contaminant occurrence or transport due to changing surface and near-surface water conditions, the adequacy of characterization tools or techniques, or limitations of remediation technologies employed in subaqueous settings. Site-specific projects described in this issue demonstrate development, testing or full-scale use of innovative technologies and approaches for addressing these issues (Fall 2014). View at http://clu-in.org/tnandt/1114.

FY 2016 SERDP Solicitations Released. The Department of Defense's Strategic Environmental Research and Development Program (SERDP) is seeking environmental research and development proposals for funding beginning in FY 2016. Projects will be selected through a competitive process. The Core Solicitation provides funding opportunities for basic and applied research and advanced technology development 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 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 $150,000 and projects are approximately one year in duration. This year, SERDP is requesting SEED proposals for the Munitions Response and Weapons Systems and Platforms program areas. All Core pre-proposals are due Thursday, January 8, 2015. SEED proposals are due Tuesday, March 10, 2015. Details for both Federal and Non-Federal submissions are available at https://www.serdp-estcp.org/Funding-Opportunities/SERDP-Solicitations.

New Fact Sheets on Geophysical Classification for Munitions Response (GCMR). These three fact sheets provide basic information about geophysical classification for munitions response from different perspectives. The Introductory Fact Sheet, published in October 2012, provides a discussion of background, existing technology, advances in technology, and ongoing technology demonstrations. Published in June 2013, the Technical Fact Sheet presents an overview of the geophysical classification technology and process, the types of terrestrial sites where this technology may be applicable, and data quality considerations. The Regulatory Fact Sheet, published in October 2014, provides regulators a source of information about geophysical classification that clearly explains what geophysical classification is, its benefits and limitations, and, most importantly, the information and data that regulators need to monitor and evaluate its use (October 2014, 14 pages). View or download at http://itrcweb.org/GuidanceDocuments/GCMR-1.pdf.

ASTM Standard Guide for Selection of Passive Techniques for Sampling Groundwater Monitoring Wells (D7929-14). The Standard describes three classes of passive sampling technologies applicable for routine groundwater monitoring. The three classes include diffusion-based samplers, sorption-based samplers, and passive grab samplers. With the new ASTM Standard, passive groundwater sampling steps into the mainstream with traditional purge sampling methods. Hard work from the ITRC Passive Sampler team and others was key to completing this important milestone. For more information about and to purchase the standard, visit http://www.astm.org/Standards/D7929.htm.

Research Brief 239: Remediation of Contaminated Groundwater by Persulfate.

Persulfate is a relatively inexpensive compound that is increasingly used for in situ chemical oxidation (ISCO) of organic contaminants. ISCO is a way of cleaning up groundwater by pumping an oxidizer such as persulfate into the contaminated groundwater. The persulfate is converted into radicals, which are much more reactive, that convert the hazardous chemicals into other compounds that are generally less toxic and more easily degraded. Although persulfate's use has increased, there is still an incomplete understanding of how it is converted into reactive radicals that degrade hazardous chemicals. Findings from a new study provide insight into adding persulfate to groundwater to break down organic contaminants, such as polychlorinated biphenyls, 1,4-dioxane, and components of petroleum, that may be difficult to treat with other methods and potentially harmful to human health. For more information, see http://tools.niehs.nih.gov/srp/researchbriefs/view.cfm?Brief_ID=239.

In Situ Biogeochemical Transformation Processes for Treating Contaminated Groundwater. In situ biogeochemical transformation (ISBGT) refers to the abiotic transformation of contaminants by iron minerals, which can occur naturally in the soil matrix or be formed by microbial activity. ISBGT processes contribute to the natural attenuation of chlorinated solvents in groundwater. ISBGT can be engineered in situ and implemented for remediation via injection of liquid amendments or installation of permeable reactive barriers. This fact sheet reviews the reaction chemistry, contaminants of concern that can be treated by ISBGT, the site conditions that promote abiotic transformation processes, key parameters for monitoring remedy performance, and the potential for combining ISGBT with other remedial technologies (September 2014, 6 pages). View or download at http://www.clu-in.org/download/techfocus/bio/bio-insitubiogeochem-FS.pdf.

USGS Scientific Investigations Report 2014-5140: Hydrogeologic Characterization and Assessment of Bioremediation of Chlorinated Benzenes and Benzene in Wetland Areas, Standard Chlorine of Delaware, Inc. Superfund Site, New Castle County, Delaware, 2009-12. This report describes the results of field and laboratory investigations that occurred between 2009-12 for an ongoing wetland study at the Standard Chlorine of Delaware Superfund site, Newcastle County, Delaware, where major contaminants include trichlorobenzene and dichlorobenzene isomers, chlorobenzene, and benzene. The goal of the wetland study is to assist the EPA in identifying an effective remedial strategy for the contaminated groundwater and sediment in the wetland areas. The major objectives included in the report are (1) wetland characterization, including determination of the hydrogeology and the distributions of groundwater contaminants and other geochemical constituents, and (2) determination of biodegradation processes naturally occurring in the wetland sediment and the effects of amendments to enhance biodegradation, including biostimulation and bioaugmentation. An anaerobic consortium, called WBC-2, that was developed by the USGS from wetland sediment at a site in Maryland to degrade chlorinated ethanes and ethenes, was used for bioaugmentation testing in this study. View or download at http://pubs.usgs.gov/sir/2014/5140/.

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:

- Economical Treatment of Dredged Material to Facilitate Beneficial Use
- Standardized Procedures for Use of Nucleic Acid-Based Tools
- Improving Effectiveness of Bioremediation at DNAPL Source Zone Sites by Applying Partitioning Electron Donors (PEDs)
- Removal Action Design Work Plan, Kansas Oxide Site, 603 Sunshine Road,

Kansas City, Kansas
- Independent Technical Evaluation and Recommendations for Contaminated Groundwater at the Department of Energy Office of Legacy Management Riverton Processing Site
- Wyckoff/Eagle Harbor Soil and Groundwater Operable Units Focused Feasibility Study: Remedial Technology Screening and Preliminary Remedial Action Alternatives
- Treatability Study Work Plan: In Situ Soil Flushing Pilot, Nevada Environmental Response Trust Site, Henderson, Nevada
- The Effect Of Soil Properties on Metal Bioavailability: Field Scale Validation to Support Regulatory Acceptance. ESTCP Cost and Performance Report
- Code of Good Practice: In Situ Chemical Oxidation

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 14 resources, events, projects and news items were added to EUGRIS in November 2014. 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:

The Megasite Management Guideline (2014). This document was produced by the Helmholtz Centre for Environmental Research - UFZ as part of the TIMBRE - An Integrated Framework of Methods,Technologies, Tools and Policies for Improvement of Brownfield regeneration in Europe Project. Across Europe there are more than 20,000 sites where industrial, military and mining activities during the past century have led to vast contaminations in soil, groundwater and surface waters. These sites are referred to as megasites if the given situation and resulting problems are particularly complex. The MMS includes a Guideline for the efficient and sustainable initialisation, as well as the management of the ongoing, revitalisation process; the Megasite Management Toolsuite (MMT), a supportive, software-based instrument for the integrated evaluation of re-use visions, as well as the MMS Website. View or download at http://www.ufz.de/mmt-guideline-en/epaper/epaper.pdf

> Conferences and Symposia

LNAPLs: Science, Management, and Technology - ITRC 2-day Classroom Training, Denver, CO, April 7-8, 2015; Seattle (area), WA, September 15-16, 2015; Austin, TX, November 18-19, 2015. 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.

Call for Ideas Extended! 2015 National Brownfields Training Conference, Chicago, IL, September 2-4, 2015. Your ideas for interactive, insightful, and engaging educational sessions are being sought for Brownfields 2015. Submit your ideas for educational sessions tailored to encourage conversations and participation from attendees. The conference planning committee is looking for ideas in the following topic areas/tracks: Moving Forward: How Do We Get from Ideas and Plans to Assessment and Cleanup; Heavy Lifting: Leveraging Available Financing to Spur

Brownfields Redevelopment; Put on Your Marketing Hat: Real Estate and Development; Planning for a Better Environment; Working Toward a Sustainable Future; Making a Visible Difference in Communities; Worry Beads: How to address Liability and Avoid Enforcement; Launching a New Era of State, Tribal, and Local Partnerships. The call for ideas is open until December 8, 2014. For more information and to submit your idea, see http://www.brownfieldsconference.org/en/education/call_for_ideas.

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.

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