U.S. ENVIRONMENTAL PROTECTION AGENCY

TechDirect, January 1, 2016

Happy Holidays and may you have a prosperous new year!

Welcome to TechDirect! Since the December 1 message, TechDirect gained 142 new subscribers for a total of 35,539. 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

ITRC Integrated DNAPL Site Strategy - January 7, 2016, 1:00PM-3:15PM EST (18:00-20:15 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.

Regional Water Availability and Superfund: Generating a Valuable Resource at Phoenix-Goodyear Airpor Area - January 13, 2016, 2:00PM-3:30PM EST (19:00-20:30 GMT). Webinar participants will learn how Superfund site cleanups can play a beneficial role in areas with limited water availability through a case study highlighting the reuse of treated groundwater at the Phoenix-Goodyear Airport Area Superfund site in Goodyear, Arizona. This webinar will discuss the growing need for water conservation, in-depth strategies of how EPA, site PRPs, the City of Goodyear and local businesses worked together to reuse treated groundwater, and share a number of water reuse success stories at the site. For more information and to register, see http://clu-in.org/live.

ITRC Geophysical Classification for Munitions Response - January 14, 2016, 1:00PM-3:15PM EST (18:00-20:15 GMT). This training class and supporting guidance document explain the process of geophysical classification, describe its benefits and limitations, and discuss the information and data needed by regulators to monitor and evaluate the use of the technology. This document and training also emphasize using a systematic planning process to develop data acquisition and decision strategies at the outset of a munitions response effort, as well as quality considerations throughout the project. Stakeholder issues that are unique to munitions respons are also discussed. After this training class, participants will: understand the technology and terminology, be reac to engage in the planning process to address quality considerations throughout a project, find tools to transfer

knowledge within organizations and to stakeholders, and start to transition mindset to decisions that leave non-hazardous items in the ground. An audience who understand current munitions response tools and procedures (for example, geophysical surveys, sensors, data analysis) will benefit most from this document and training. For more information and to register, see http://www.itrcweb.org or https://clu-in.org/live.

SERDP & ESTCP Vapor Intrusion: Regulatory Update and Advances in Assessment Tools - January 14, 2016, 12:00PM EST (17:00 GMT). Join SERDP and ESTCP for a webinar featuring two presentations: "Impact o EPA's Final Vapor Intrusion Guidance on the Regulated Community" by Dr. Helen Dawson and "Demonstration/Validation of Passive Samplers for Vapor Intrusion Assessment" by Dr. Todd McAlary. For more information and to register, see please visit https://serdp-estcp.org/Tools-and-Training/Webinar-Series/01-14-2016.

ITRC LNAPL Training Parts 1, 2, and 3 - January 21, 26, 28, 2016. 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 thousanc of remediation sites across the country, and are frequently the focus of assessment and remediation efforts. Part of this training course explains how LNAPLs behave in the subsurface and examines what controls their behavio 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 mod 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) approacl 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 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 - February 2, 2016, 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, anc 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 Environmental Molecular Diagnostics: New Tools for Better Decisions - February 4, 2016, 1:00PM-3:15PM EST (18:00-20:15 GMT). Environmental molecular diagnostics (EMDs) are a group of advanced and emerging analytical techniques used to analyze biological and chemical characteristics of environmental samples. Although EMDs have been used over the past 25 years in various scientific fields, particularly medical research and diagnostic fields, their application to environmental remediation management is relatively new and rapidly developing. The ITRC Environmental Molecular Diagnostics Fact Sheets (EMD-1, 2011), ITRC Environmental Molecular Diagnostics Technical and Regulatory Guidance (EMD-2, 2013) and this companion Internet-based training will foster the appropriate uses of EMDs and help regulators, consultants, site owners, an other stakeholders to better understand a site and to make decisions based on the results of EMD analyses. At the conclusion of the training, learners should be able to determine when and how to use the ITRC Environmenta Molecular Diagnostics Technical and Regulatory Guidance (EMD-2, 2013); define when EMDs can cost-effective augment traditional remediation data sets; and describe the utility of various types of EMDs during remediation activities. 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-15-002). Greener cleanup best management practices (BMPs) can reduce the environmental footprint of activities involved in remediating contaminated sites. Each feature article in this issue of Technology News & Trends provides site-specific examples of footprint reductions addressing one o more of the five core elements of a greener cleanup as outlined in the U.S. EPA Principles for Greener Cleanups. The articles also highlight quantitative and qualitative improvements in project outcomes as a result of implementing the BMPs (Fall 2015). View at http://clu-in.org/tnandt/1115.

Characterization, Modeling, Monitoring, and Remediation of Fractured Rock. This report examines the state of practice and state of art in the characterization of fractured rock and the chemical and biological processes related to subsurface contaminant fate and transport. Many new characterization tools have been developed in the last 20 years along with a greater appreciation for the importance of chemical and biological processes that c occur in the fractured rock environment. The findings of this report are particularly applicable to engineered repositories for buried or stored waste and to fractured rock sites that have been contaminated as a result of past disposal or other practices (2015, 244 pages). View or download at http://www.nap.edu/catalog/21742/characterization-modeling-monitoring-and-remediation-of-fractured-rock.

Superfund Research Program Research Brief 252: Bioavailability Changes in Sediments and Bioaccumulation in Fish. Changes in uptake of polychlorinated biphenyls (PCBs) in fish after remediation of their aquatic environment may be predicted, according to researchers at the University of Maryland, Baltimore County. They measured freely dissolved concentrations of PCBs in water and applied mathematical models to predict the effectiveness of sediment remediation. The study is one step toward understanding how PCB bioavailability changes in sediment as a result of activated carbon amendments, a method to sequester PCBs, ca influence transfer of PCBs to fish. For more information, see http://tools.niehs.nih.gov/srp/researchbriefs/view.cfm?Brief_ID=252. To get monthly updates on research advances from the SRP you can subscribe to their Research Brief mailing list a https://list.nih.gov/cgi-bin/wa.exe?SUBED1=SRP-BRIEF&A=1.

Assessment of Mitigation Systems on Vapor Intrusion: Temporal Trends, Attenuation Factors, and Contaminant Migration Routes under Mitigated and Non-Mitigated Conditions (EPA 600-R-13-241). In 2011, researchers began an investigation into the general principles of how vapors enter into a single residence study site, a highly instrumented pre-1920 residential duplex located in Indianapolis, Indiana. This report, the second in a series of reports based on that research, examines the efficiency of a subslab depressurization syste to prevent and remove radon and VOCs with reference to (a) subsurface conditions that influence the movement of VOCs and radon into the home; (b) system effects on VOC and radon concentrations; and (c) the influence of winter capping event on vapor movement into the home (June 2015, 608 pages). View or download at https://clu-in.org/download/issues/vi/VI-EPA-600-R-13-241.pdf.

Simple, Efficient, and Rapid Methods to Determine the Potential for Vapor Intrusion into the Home: Temporal Trends, Vapor Intrusion Forecasting, Sampling Strategies, and Contaminant Migration Routes (EPA 600-R-15-070). Researchers began an investigation in 2011 into the general principles of how vapors enter into a single residence, a highly instrumented pre-1920 residential duplex located in Indianapolis, Indiana. This report, the third in a series of reports based on that research, examines the use of radon and other variables, suc as weather data changes in temperature and differential pressure between indoors and outdoors, as potential low-cost, easily monitored indicators of when to sample for vapor intrusion events and when to turn on the mitigation system to reduce vapor intrusion exposure to residents. Select data trends through the years of study a this site are also presented (October 2015, 332 pages). View or download at https://clu-in.org/download/issues/vi/VI-EPA-600-R-15-070.pdf.

Determination of the Biologically Relevant Sampling Depth for Terrestrial and Aquatic Ecological Risk Assessments. Ecological risk assessors are frequently faced with the challenge of defining the biologically active zone, or biotic zone, in soils and sediments during the design and interpretation of soil and sediment sampling programs. With respect to terrestrial assessments, this study uses a meta-analysis approach to quantify the zone of highest biological activity for soil-dwelling ecological receptors commonly utilized in ecological risk assessment For decisions related to ecological assessment or remediation in aquatic scenarios, we develop practical default values for the depth of the biotic zone (i.e., biologically relevant sampling depth) in various habitats based on the 80th percentile of abundance or biomass depth distributions. In areas populated by a high density of deep dwellir organisms such as those listed in this paper, the biotic zone may be somewhat deeper than our recommended values. View or download at: http://cfpub.epa.gov/ncea/erasc/recordisplay.cfm?deid=310058.

Technology Innovation News Survey Corner. The Technology Innovation News Survey contains market/commercialization information; reports on demonstrations, feasibility studies and research; and other new 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 include in recent issues:

- CO2 Sparging: Phase 2 Full-Scale Implementation and Monitoring Report, LCP Chemicals Site, Brunswicl GA
- Pilot Study Implementation Report [ISCO], Evandale Avenue Sources, Middlefield-Ellis-Whisman Regiona Groundwater Remediation Program, Mountain View, California
- Particle Transport of Radionuclides Following a RadiologicalEvent: A Literature Review and Summary
- An Updated Look at PCBs
- In-Situ Arsenic Removal During Groundwater Recharge Through Unsaturated Alluvium
- Wildlife Toxicity Assessments for Chemicals of Military Concern

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 9 resources, events, projects and news items were added to EUGRIS in December 2015. These can be viewed at http://www.eugris.info/whatsnew.asp . Then select the appropriate month and year for the updates i which you are interested. The following resource was posted on EUGRIS:

SR2008 No 27: Mobile Plant for the Treatment of Soils and Contaminated Material, Substances or Products. Updated by the UK's Environment Agency in 2015, this document lists standard rules to operate a mobile plant for the treatment of soils and contaminated material, substances or products and includes a link to th deployment form.View or download at https://www.gov.uk/government/publications/standard-rules-sr2008-number-27

Promising Intervention to Capture and Degrade Fuel Spills in Antarctic Soils. In the December 10, 2015 Issue 439 of Science for Environment Policy from the European Commission, results from a 2005 PRB project ar highlighted. This project involved a narrow trench dug downstream of a fuel spill at Casey Station, Antarctica. A PRB was inserted to release nutrients in a sequenced fashion. The
PRB was monitored over time to measure its effectiveness at bioremediation. View or download at
http://ec.europa.eu/environment/integration/research/newsalert/pdf/promising_intervention_to_capture_and_degrade_fuel_spills_in_Antarctic_soils_439na5_en.p

> Conferences and Symposia

Best Practices for Site Characterization Throughout the Remediation Process, San Francisco, CA, Janua 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.

The Emerging Contaminants Summit, Westminster, Colorado, March 1-2, 2016. Brought to you by the producers of the RemTEC Summit, the Emerging Contaminants Summit is a brand new conference dedicated to the latest developments in the detection, fate and transport, risk assessment, treatment and regulation of emerging contaminants. The summit draws leaders and key stakeholders from academia, government, regulator community as well as site owners, private consulting agencies and various other environmental professionals to discuss the mitigation of emerging contaminants across all environmental media including surface water, groundwater, drinking water, wastewater, recycled water and soils. This year, USEPA staff will present or chair sessions on a variety of topics including Steve Dyment (Analytical, Toxicity, Regulatory and Legal Frontiers), Hila Thornton (Characterization And Mitigation of Perfluoroalkyl and Polyfluoroalkyl Substances) and Rick Stevens (Trace Organics in Biosolids: A Regulatory Perspective).The early bird registration deadline is January 29, 2016.

For more information and to register, see http://www.contaminantssummit.com/.

Intersol 2016 - International Conference-Exhibition on Soils, Sediments and Water, Lille, France, March 15-17, 2016. Intersol 2016 themes cover polluted sites and soils and health risks, pollution diagnoses, and research on toxicological and eco-toxicological effects. For more information and to register, see http://www.intersol.fr/.

LNAPLs: Science, Management, and Technology - ITRC 2-day Classroom Training, Atlanta (area), GA, April 5-6, 2016. 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 w 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.

Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management - ITRC 2-day Classroom Training, Denver, CO, May 9-10, 2016. 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. The clas will enable you to develop on-the-job 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; communicate ITRC PVI strategy and justify science-based decisions to management, clients, and the public; understand the essential principles of biodegradation and the fundamentals of vapor movement through the vadose zone; and appreciate the important role of modeling in the investigation of petroleum sites. Interactive learning with classroom exercises and Q&A sessions will reinforce these course learning objectives. You will also have the opportunity to network with other environmental professionals. 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.

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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