TechDirect, January 1, 2015

Happy Holidays and may you have a prosperous new year! Welcome to TechDirect! Since the December 1 message, TechDirect gained 281 new subscribers for a total of 34,400. 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.

> Paid Internships

Four Paid Postgraduate Internships Available with EPA. EPA's Office of Superfund Remediation and Technology Innovation in Arlington, Virginia has four paid postgraduate internships available through the Oak Ridge Institute for Science and Education. The internships are full-time for one year and are renewable for up to three additional years. Candidates must have with degrees earned within the last five years related to environmental engineering/chemical engineering, soil science, chemistry and toxicology/risk assessment. For more information, see http://www.clu-in.org/jobs.

> Upcoming Live Internet Seminars

ITRC Green & Sustainable Remediation - January 6, 2015, 1:00PM-3:15PM EST (18:00-20:15 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, and 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.

NARPM Presents...ICs in Decision Documents - January 7, 2015, 2:00PM-3:30PM EST (19:00-20:30 GMT). Join in this seminar to learn about effective documentation of Institutional Controls (ICs) in Superfund decision documents. This webinar will help Remedial Project Managers (RPMs) and IC Coordinators better understand the specific

requirements for formally documenting ICs in Explanation of Significant Differences (ESD), Record of Decision (ROD) Amendments, and RODs. Participants will hear both the regional and headquarters' perspective on the appropriate use of ICs in remedy decisions, as well as be provided with site-specific examples. The presenters will identify the expectations of the National Contingency Plan (NCP), as well as explore additional policy and guidance to assist RPMs in documenting ICs. Finally, participants will understand how properly documented ICs can help ensure meaningful public involvement as well as facilitate the development of the Institutional Control Implementation and Assurance Plans (ICIAPs). For more information and to register, see http://clu-in.org/live.

ITRC LNAPL Training Parts 1, 2, and 3 - January 8, 15, 22. 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 .

SERDP & ESTCP Webinar Series: DNAPL Source Zone Management Approaches, January 8, 12:00PM EST (17:00PM GMT). The next event in the Strategic Environmental Research and Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP) webinar series will feature two technical presentations detailing results from ESTCP-funded projects. First, Dr. Paul Johnson (Arizona State University) will discuss a data-driven approach to assessing source zone natural attenuation at chlorinated solvent spill sites. Second, Dr. Charles Newell (GSI Environmental) will highlight a recently completed demonstration project of an innovative method for reconstructing the "source history" at a site for natural attenuation assessments by using high-resolution soil coring within low-permeability zones. For more information and to register, see https://serdp-estcp.org/Tools-and-Training/Webinar-Series/01-08-2015.

ITRC Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management - January 13, 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 .

RCRA Corrective Action Inspection Training - January 14, 2015, 1:00PM-3:00PM EST (18:00-20:00 GMT). This 2-hr webinar, designed for Federal and State RCRA compliance, enforcement and permitting personnel who have responsibility for Corrective Action (including Corrective Action Project Managers and RCRA regulatory inspectors who may be asked to inspect Corrective Action activities), will provide information on how to prepare and conduct various types of RCRA Corrective Action Inspections, as well as report writing and case development after the inspection has concluded. 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 3 and 5, 2015. 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 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.

> New Documents and Web Resources

Programmed Calculators for Dioxin Toxicity Equivalence (TEQ). 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. These demonstrations provide a description of two publicly available macro-driven spreadsheets that calculate dioxin TEQ from congener results: an Advanced TEQ Calculator and a Basic TEQ Calculator. View the demonstrations at http://www.clu-in.org/conf/tio/TEQ/.

The 3D Elevation Program Initiative - A Call for Action. The 3D Elevation Program (3DEP) initiative is accelerating the rate of three-dimensional (3D) elevation data collection in response to a call for action to address a wide range of urgent needs nationwide. The National Elevation Dataset (NED) will be completely refreshed with new elevation data products and services. The call for action requires broad support from a large partnership community committed to the achievement of national 3D elevation data coverage. The initiative is being led by the U.S. Geological Survey (USGS) and includes many partners-Federal agencies and State, Tribal, and local governments-who will work together to build on existing programs to complete the national collection of 3D elevation data in 8 years. Private sector firms, under contract to the Government, will continue to

collect the data and provide essential technology solutions for the Government to manage and deliver these data and services. As proposed, the 3DEP effort would begin providing products and services to partners and the public in 2015 (September 2014, 48 pages). View or download at http://pubs.usgs.gov/circ/1399/.

Environmental Restoration Technology Transfer (ER T2) Tools - Interactive Web-Based Informational Tools on Innovative Technologies. The Naval Facilities Engineering Command (NAVFAC) Technology Transfer (T2) Program supports information sharing in order to identify the Navy's Environmental Restoration (ER) challenges and to promote the use of innovative and cost-effective solutions. The tools are meant to support Navy Remedial Project Managers by providing information on various contaminant and technology issues. View and use at http://clu-in.org/ert2.

SERDP and ESTCP Announce 2014 Projects of the Year. SERDP and ESTCP have announced their 2014 Projects of the Year. This year's awards recognize scientific advances and technological solutions to some of DoD's most significant environmental challenges. The findings, approaches, tools, and guidance developed by these projects will help DoD enhance its mission capabilities, improve its environmental and energy performance, and reduce costs. View at http://clu-in.org/serdpestcp2014.

Illustrated Handbook of LNAPL Transport and Fate in the Subsurface. The LNAPL illustrated handbook presents best-practice guidance for the assessment and remediation of light non-aqueous phase liquids (LNAPLs) in the subsurface. LNAPLs notably include fuels and oils, for example petrol (gasoline), diesel and heating oils, and are amongst the most commonly encountered organic contaminants in the subsurface environment due to their ubiquitous use, accidental release and, perhaps, poor (historical) disposal. Central to the handbook and the management of risks posed is the development of conceptual models of LNAPL behavior in common hydrogeological systems. The LNAPL illustrated handbook provides a blend of technical detail and real world conceptualization of the LNAPL problem and appropriate methods to investigate and manage it. The handbook also facilitates access to a wealth of detailed research, guidance and case study literature within the various topics covered. It will be useful to the practitioner and research communities, and also provide a valuable educational resource to others having a less direct interest or specialized knowledge. View or download at http://www.claire.co.uk/LNAPL.

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:

- Short-Term Performance of an Activated Carbon Amendment to Reduce PCB Bioavailability at an Active Naval Shipyard: Interim Report
- CO2 Radiocarbon Analysis to Quantify Organic Contaminant Degradation, MNA, and Engineered Remediation Approaches
- Standardized Procedures for Use of Nucleic Acid-Based Tools: Recommendations for Groundwater Sampling and Analysis Using qPCR
- Air Sensor Guidebook
- Pilot-Scale Treatment of Virginia Canyon Mine Drainage in Idaho Springs, Colorado, USA Using Octolig(r)
- Mercury in the Nation's Streams: Levels, Trends, and Implications
- Protocol for Measuring Dioxin-Like Activity in Environmental Samples Using In Vitro Reporter Gene DR-Luc Assays
- Technical Report on Aquatic Effect-Based Monitoring Tools
- Environmental Implications of Phosphate-Based Amendments in Heavy Metal Contaminated Alluvial Soil

- AQUAREHAB: Generic Guidelines

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 15 resources, events, projects and news items were added to EUGRIS in December 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 resources were posted on EUGRIS:

The 3rd Sustainable Remediation Conference Proceedings (September, 17-18-19, 2014 Ferrara, Italy). Topics covered at the conference included: Conceptual Framing new developments and learnings since 2012, visioning and experiences on policy incentives and regulatory support Tools, Metrics and Indicators characterisation and analysis to better understand green, eco-efficient or sustainable and socio-economical aspects Greening Remediation, eco-efficient Technologies and Opportunities from Synergy lowering the environmental footprint and increasing cost-effectiveness; technology demonstration; renewables, combined benefit approaches Case-studies brownfield redevelopment; the environmental footprint; increased cost-effectiveness, and environmental & social improvement, renewables, combined benefit approaches (e.g. heat storage and groundwater remediation) Stakeholder involvement and participative approaches. View or download at http://www.sustrem2014.com/final_conference_documentation.html

Financing Mechanisms for Addressing Remediation of Site Contamination (2014, World Bank). Industrial and commercial facilities provide great economic benefit to communities throughout the world. Unfortunately, many industries use or have used practices and materials which have proven toxic to the environment and to those who live and work near contaminated sites. The definition and degree of contamination varies at national and regional levels of government, but leaders throughout the world now recognize the hazard that contaminated industrial and service sites present to the wellbeing of their communities and seek innovative ways to finance the remediation of these challenging sites. Industrial contamination can have a severe, direct impact on adjacent communities. The cleanup and redevelopment of a so-called ?brownfield? can ?improve a community?s economy, provide an opportunity for habitat restoration, and create public space.? Cleanup and redevelopment of brownfields can be an effective economic development strategy, with benefits seen in two timeframes. First, there is an immediate and one-time capital expenditure for cleanup activities, infrastructure, and construction. The initial investment generates tax revenues, temporary family-wage jobs, and indirect economic benefits within the community. Secondly, there is a long-term economic impact from remediation projects in the form of higher property values, long-term tax revenues, and the attraction of external capital to the community by tenants of the revitalized property. The economic benefit of contaminated site redevelopment is perhaps most clearly illustrated by permanent job creation from the restored properties. The deleterious effects of industrial contamination across all facets of a community typically provide a strong incentive for leaders to seek financing mechanisms that make site remediation possible. View or download at http://documents.worldbank.org/curated/en/2014/10/20470907/financing-mechanisms-addressing-remediation-site-contamination

> Conferences and Symposia

Groundwater High-Resolution Site Characterization (HRSC), Kansas City, MO, February 24-25, 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 http://www.trainex.org/hrsc.

REMTEC, Westminster, Colorado, March 2-4, 2015. The REMTEC Summit delivers a truly unique platform focused on advancing environmental science and the remediation industry. At this event, participants will hear essential sources if information on technology, application, and policy affecting the restoration of contaminated sites. This year, USEPA staff will present on a variety of topics including Groundwater Remedy Performance and Completion Strategies, Vadose Zone: New Understandings in Contaminant Fate and Transport, and New Life for Physical Treatment Processes and Remedy Enhancement Using Treatment Trains. For more information and to register, see http://www.remtecsummit.com/ .

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.

Registration Now Open! 2015 National Brownfields Training Conference, Chicago, IL, September 2-4, 2015. Brownfields 2015 promises something for all levels of stakeholders and practitioners. The conference program includes speakers, discussions, mobile workshops, films, and other learning formats that are calibrated to provide you with case study examples, program updates, and useful strategies for meeting your brownfield challenges head on. Early bird registration is open until February 1, 2015. For more information and to register, see http://www.brownfieldsconference.org/en/registerinfo.

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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