U.S. ENVIRONMENTAL PROTECTION AGENCY

TechDirect, June 1, 2016

Welcome to TechDirect! Since the May 1 message, TechDirect gained 198 new subscribers for a total of 36,206. 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 Remedy Selection for Contaminated Sediments - June 2, 2016, 1:00PM-3:15PM EDT (17:00-19:15 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 - June 7, 2016, 1:00PM-3:15PM EDT (17:00-19:15 GMT). Statistical techniques may be used throughout the process of cleaning up contaminated groundwater. It is challenging for practitioners, who are not experts in statistics, to interpret, and use statistical techniques. ITRC developed the Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) and this associated training specifically for environmental project managers who review or use statistical calculations for reports, who make recommendations or decisions based on statistics, or who need to demonstrate compliance for groundwater projects. The training class will encourage and support project managers and others who are not statisticians to: use the ITRC Technical and Regulatory Web-based Guidance on

Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) to make better decisions for projects; apply key aspects of the statistical approach to groundwater data; and answer common questions on background, compliance, trend analysis, and monitoring optimization. ITRC's Technical and Regulatory Web-based Guidance on Groundwater Statistics and Monitoring Compliance (GSMC-1, 2013) and this associated training bring clarity to the planning, implementation, and communication of groundwater statistical methods and should lead to greater confidence and transparency in the use of groundwater statistics for site management. For more information and to register, see http://www.itrcweb.org or https://clu-in.org/live.

NEPA and Mining 101, Part 3: Regulatory Process & How the Public and Tribes can Engage - June 8, 2016, 1:00PM-3:00PM EDT (17:00-19:00 GMT). The course is designed to provide an overview of mining and the National Environmental Policy Act (NEPA) and is geared towards how tribes can participate in the NEPA process. Part 3 will lay out the regulatory process of mining with an in depth look into NEPA review process and major permits associated with mine operations. The session will also provide examples of key opportunities for tribal participation in the development process. Participants will walk away with an understanding and ability to engage in the NEPA process. Participants are encouraged to ask questions. For more information and to register, see https://clu-in.org/live. You may also be interested in the May 12 archive of Part 1 from this course on Mining Fundamentals at https://clu-in.org/training/webinar/NEPAandMining101-1_051216/ and the May 24 archive of Part 2 on Mining Environmental Concerns and Issues at https://clu-in.org/training/webinar/NEPAandMining101-2_052416.

Waterfront Reuse in EPA Region 2: Providing Riverfront Access - June 15, 2016, 2:00PM-3:30PM EDT (18:00-19:30 GMT). Reuse of waterfront sites with a history of contamination can provide habitat restoration, as well as recreational and green space amenities for local communities. The webinar will provide case studies of sites in EPA Region 2 that have been cleaned up and redeveloped with waterfront property in mind. Reuse at these sites has restored and preserved ecological habitats and historic places and provided access to and expanded on other development projects. For more information and to register, see https://clu-in.org/live.

SRP Water Innovation - An Integrated Approach to Sustainable Solutions: Session II - Technologies for Water Remediation - June 20, 2016, 1:00PM-3:00PM EDT (17:00-19:00 GMT). The NIEHS Superfund Research Program (SRP) presents the second session in the Risk e-Learning series SRP Water Innovation - An Integrated Approach to Sustainable Solutions (http://www.niehs.nih.gov/research/supported/centers/srp/events/riskelearning/water_innovation/index.cfm). Session II - Technologies for Water Remediation will feature SRP-funded projects related to remediation of hazardous substances in water. The presentations will highlight potential tools for reducing water contaminants, such as polychlorinated biphenyls, trichloroethylene, and other difficult to treat contaminants. Tools include enhanced membranes and in situ chemical treatment systems. Presenters will also discuss technology transfer opportunities and challenges. Presenters include Dibakar Bhattacharyya, Ph.D., and Lindell Ormsbee, Ph.D., professors at the University of Kentucky SRP Center, Alexis Carpenter, Ph.D., Chief Scientist at Triad Growth Partners and former Duke University SRP Center trainee, and Thomas Bruton, Ph.D. a trainee at the University of California, Berkeley SRP Center. For more information and to register, see https://clu-in.org/live.

SRP Water Innovation - An Integrated Approach to Sustainable Solutions: Session III - Water Detection Technologies - June 27, 2016, 1:00PM-3:00PM EDT (17:00-19:00 GMT). The NIEHS Superfund Research Program (SRP) presents the third session in the Risk e-Learning series SRP Water Innovation - An Integrated Approach to Sustainable Solutions

(http://www.niehs.nih.gov/research/supported/centers/srp/events/riskelearning/water_innovation/index.cfm). Session III Water Detection Technologies will feature SRP-funded projects that are developing innovative technologies for the monitoring of hazardous substances in water. The presentations will highlight potential non-targeted testing, passive sampling, and bioanalytical approaches to detect a wide variety of contaminants in water, with applicability to drinking water. Speakers include SRP grantees Roger Giese, Ph.D., professor at Northeastern University, Damian Shea, Ph.D., a professor at North Carolina State University, and Michael Denison, Ph.D., Candace Spier Bever, Ph.D., and Thomas Young, Ph.D., from the University of California, Davis. For more information and to register, see https://clu-in.org/live.

> New Documents and Web Resources

Revised ASTM Standard Guide for Greener Cleanups (E2893-16). The ASTM Standard Guide for Greener Cleanups is intended to encourage property owners, regulatory agencies, responsible parties, developers and communities to voluntarily use greener practices for contaminated site cleanup. EPA representatives recently worked with ASTM International to update the standard guide, which was originally issued in 2013. The revised standard released by ASTM International in May 2016 contains refinements to the "Greener Cleanup BMP Table" appearing as Appendix X3 and continues to describe a process for identifying, evaluating and incorporating best management practices (BMPs) and options for quantifying the environmental footprint of a cleanup. For more information about and to purchase the revised standard, visit http://www.astm.org/Standards/E2893.htm. For background and additional information about greener cleanups, visit https://clu-in.org/greenremediation/.

ProUCL 5.1 is Now Available. The EPA Site Characterization and Monitoring Technical Support Center (SCMTSC) has updated ProUCL to version 5.1.00 (5.1). ProUCL version 5.1 is a comprehensive free statistical software package with statistical methods and graphical tools to address many environmental sampling and statistical issues. Version 5.1 is a general update to version 5.0 correcting known bugs, crashes, and unhandled exceptions (e.g., on bad data sets). In ProUCL 5.1, enhancements have been made in the Trend Analysis option of the Statistical Test module. ProUCL 5.1 computes and outputs residuals for the non-parametric T-S trend line which may be helpful to compute a prediction band around the T-S trend line. In addition to generating Q-Q plots based upon detected observations, the Goodness of Fit Tests (GoF) option of the Statistical Tests module of 5.1 generates censored probability plots for data sets with NDs. Some changes have also been made in the decision table used to make suggestions for UCL selection based upon a gamma distribution. Download at https://www.epa.gov/land-research/proucl-software.

NAVFAC Sediment Reactive Capping Fact Sheet. Reactive capping is an emerging remedial approach that incorporates materials capable of directly sequestering and/or degrading contaminants to reduce the environmental risks posed by the impacted sediments. NAVFAC has prepared this fact sheet to review reactive capping approaches, materials, deployment, monitoring, and lessons learned from two Navy case study applications (December 2015, 11 pages). View or download at https://clu-in.org/NAVFACSedimentReactiveCapping.

Nuclear Site Remediation and Restoration during Decommissioning of Nuclear Installations A Report by the NEA Co-operative Programme on Decommissioning. This report summarizes work carried out between March 2014 and December 2015, providing observations and recommendations relating to the

development of strategies and plans for sustainable site remediation at nuclear sites. "Sustainable remediation" represents remediation actions and goals that are informed by an understanding of the safety and environmental benefits, the impacts of remediation activities, and the social and economic benefits and impacts, including the impacts on natural resources and climate change, both in the short term and the long term. This report describes the concept of sustainable remediation of contaminated land and groundwater in the context of the decommissioning of nuclear sites. The main steps in the determination of end states are described and the importance of an adaptive approach is highlighted. Recently, the NEA also published (2014), Nuclear Site Remediation and Restoration during Decommissioning of Nuclear Installations: A Report by the NEA Co-operative Programme on Decommissioning. The new 2016 report may found at this URL: http://www.oecd-nea.org/rwm/pubs/2016/7290-strategic-considerations.pdf. The 2014 report may be found at this URL: http://www.oecd-nea.org/rwm/pubs/2014/7192-cpd-report.pdf.

Superfund Research Program Research Brief 257: Using Field Data and Numerical Modeling to Assess Vapor Intrusion Risk. A recent Superfund Research Program (SRP) study reveals that measurements of chemical concentrations in groundwater may not be a good indicator of whether the chemicals are seeping into buildings and contaminating indoor air. The findings provide insight into how an approach incorporating multiple lines of evidence, including soil gas measurements and a 3-D model, can be used to better evaluate exposure risks from vapor intrusion into homes and buildings. For more information, see http://tools.niehs.nih.gov/srp/researchbriefs/view.cfm?Brief_ID=257. To get monthly updates on research advances from the SRP you can subscribe to their Research Brief mailing list at https://list.nih.gov/cgi-bin/wa.exe?SUBED1=SRP-BRIEF&A=1.

Technology Innovation News Survey Corner. The Technology Innovation News Survey contains market/commercialization information; reports on demonstrations, feasibility studies and research; and other news relevant to the hazardous waste community interested in technology development. Recent issues, complete archives, and subscription information is available at https://clu-in.org/products/tins/. The following resources were included in recent issues:

- In Situ Biogeochemical Treatment Demonstration: Lessons Learned from ESTCP Project ER-201124
- Measurement and Modeling of Ecosystem Risk and Recovery for In Situ Treatment of Contaminated Sediments
- Impacts of Enhanced Reductive Bioremediation on Post-Remediation Groundwater Quality
- Testing Novel CR-39 Detector Deployment System for Identification of Subsurface Fractures, Soda Springs, ID
- Development of a Willow-Based Evapotranspiration Cover System
- Mercury Remediation in Wetland Sediment Using Zero-Valent Iron and Granular Activated Carbon
- A Fractured Rock Geophysical Toolbox Method Selection Tool
- NAVFAC Technology Transfer Review: Sediment Reactive Capping
- Ex-Situ Remediation Technologies for Environmental Pollutants: A Critical Perspective

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 18 resources, events, projects and news items were added to EUGRIS in May 2016. 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:

Land Contamination and Brownfield Management Policy Development in China: Learning from the UK Experience (2016). China's government has begun to lay the

foundation for market growth which will bring a wide variety of opportunities for business with soil protection and remediation still in the early stages of development. In common with other emerging land contamination markets, China stands to benefit from comprehensive and systematic planning for risk based land management, encompassing both contaminated soil and groundwater. Future collaboration on land contamination management and policy between China and the UK should be sustained, as the UK has developed mature market and management systems for land contamination. View or download at http://cnukcontaminatedland.com/uk/wp-content/uploads/sites/2/2015/10/SPF_Report_final.pdf .

> Conferences and Symposia

Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management - ITRC 2-day Classroom Training, Somerset, NJ, September 26-27, 2016 AND Framingham, MA, November 9-10, 2016. Preapproved for continuing education for CT LEPs, MA LSPs, NJ LSRPs, and SC PGs. 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. Within the training class - hear about EPA's Technical Guide For Addressing Petroleum Vapor Intrusion At Leaking Underground Storage Tank Sites (June 2015). The ITRC guidance document and EPA guide are complementary documents with the ITRC training course providing the "how-to" knowledge and skills for screening, investigating, and managing the petroleum vapor intrusion pathway. The class will enable you to develop the 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; and communicate ITRC PVI strategy and justify science-based decisions to management, clients, and the public. 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.

Incremental-Composite Soil Sampling, Chicago, IL, July 28, 2016. This full-day course focuses on the theory and application of ITRC's Incremental Sampling Methodology (ISM), composite sampling designs, and hybrids of the two (Incremental-Composite Sampling, ICS). ICS hybrid designs are useful to address multiple project goals simultaneously. Since "representativeness" is a key aspect of data quality and ISM/ICS data are demonstrably more representative than most discrete data, it will be argued that ICS data are indeed "better" than non-ICS data. The course will answer questions such as: What is the difference between ITRC's ISM and EPA's Incremental-Composite Sampling (ICS) strategies? Is there written EPA guidance? What features should an ISM or ICS design have? Can ICS give project risk assessors the data they want, while simultaneously meeting the RPM's own data needs for characterization or remedial design? How are background concentrations determined and comparisons to background handled using ICS? How do we know whether ICS "worked" for the project? For more information and to register, see https://trainex.org/icss.

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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