



TechDirect, December 1, 2017

Welcome to TechDirect! Since the November 1 message, TechDirect gained 174 new subscribers for a total of 39,703. 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.

> Special Announcements

Open Solicitation: EPA 2017-2018 Small Business Innovation Research (SBIR) Phase I. EPA is calling for small businesses to apply for Phase I awards up to \$100,000 to demonstrate proof of concept in the following topic areas: air quality, manufacturing, clean and safe water, land revitalization, homeland security, and building construction materials. Successful Phase I companies are eligible to apply for Phase II funding, which awards up to \$300,000 for two years with a commercialization option of up to \$100,000, to further develop and commercialize their technologies. The proposal submission deadline is December 19, 2017. For more information and application instructions, see <https://www.epa.gov/sbir/sbir-funding-opportunities>.

Public Comment Period for SW-846 Update VI, Phase III: New Leaching Environmental Assessment Framework (LEAF) Methods and Technical Implementation Guide. This update contains four tests (EPA Methods 1313, 1314, 1315 and 1316), known as the Leaching Environmental Assessment Framework (LEAF) tests, and technical implementation guidance (The LEAF How-To Guide) that evaluate how waste constituent leaching changes with different environmental conditions. The LEAF tests are intended to be more accurate than other leaching tests by assessing constituent leaching potential under actual or plausible disposal conditions. Because the LEAF test methods represent a new approach to evaluating leaching potential, the Agency is developing technical implementation guidance (The LEAF How-To Guide) to help potential users understand the LEAF tests and how to use them. The guidance will also help users interpret the data generated by these tests and provide examples of how the test data can be used for assessing possible constituent release and provide a source term for groundwater fate and transport models used in risk assessment. The LEAF test methods and technical implementation guidance are available for public comment through January 31, 2018. For more information and submission instructions, see

> Archived Internet Seminar Highlights

Sustained *In Situ* Detoxification of Priority Chloroorganic Pollutants - Archived on March 13, 2017. Contaminated site cleanup and environmental stewardship are costly tasks and continued research and innovation can lower the financial burden to site owners and to the taxpayer. A variety of technologies addressing groundwater contamination emerged and have been implemented. Bioremediation takes advantage of naturally occurring microorganisms that detoxify contaminants and *in situ* implementation of this approach promises to meet cleanup goals at reasonable costs. While biostimulation and bioaugmentation have been successfully applied at numerous sites, the current approaches should be considered brute-force, and more refined treatment (i.e., precision bioremediation) will result in a similar reduction of contaminant concentrations at substantially lower capital investment and lesser environmental impacts. Progress in understanding the microbiology contributing to chlorinated solvent detoxification under anoxic conditions serves as an example of how investments in fundamental research and translational efforts can advance bioremediation from an empirical practice to an approach with predictable outcomes. View the archive at https://clu-in.org/conf/tio/ISB_031317/.

Naval Facilities Engineering Command (NAVFAC) Open Environmental Restoration Resource (OER2) Webinar Series. NAVFAC developed the OER2 Series for Remedial Project Managers (RPMs), contractors, and other remediation practitioners who support and execute the Environmental Restoration Program (ERP) for installations within the Department of the Navy (DON). View the archives at <https://clu-in.org/oer2>

> New Documents and Web Resources

ITRC Bioavailability of Contaminants in Soil: Considerations for Human Health Risk Assessment. This Interstate Technology and Regulatory Council (ITRC) document describes the general concepts of the bioavailability of contaminants in soil, reviews the state of the science, and discusses how to incorporate bioavailability into human health risk assessment. This guidance addresses lead, arsenic, and polycyclic aromatic hydrocarbons for the incidental ingestion of soil (November 2017). View and use at <http://bcs-1.itrcweb.org/>.

ITRC Releases Three PFAS Fact Sheets. ITRC has released its first three technical PFAS fact sheets:

1. History and Use
2. Regulations, Guidance, and Advisories
3. Naming Conventions and Physical and Chemical Properties

The fact sheets provide information about the whole spectrum of PFAS issues and an extensive reference list. The fact sheets are living documents and will be updated as more technical and regulatory information becomes available. The last three fact sheets will be out in December 2017. The team is also working on an in-depth guidance document which will provide a greater understanding of the technical and regulatory

aspects of PFAS, as well as another fact sheet focused on aqueous film-forming foams (AFFF). The fact sheets are currently being translated into Spanish. View or download at <http://pfas-1.itrcweb.org/fact-sheets/>.

Radiological Characterisation from a Waste and Materials End-State Perspective Practices and Experience. Radiological characterisation is a key enabling activity for the planning and implementation of nuclear facility decommissioning. Effective characterisation allows the extent, location and nature of contamination to be determined and provides crucial information for facility dismantling, the management of material and waste arisings, the protection of workers, the public and the environment, and associated cost estimations. This report will be useful for characterisation practitioners who carry out tactical planning, preparation, optimisation and implementation of characterisation to support the decommissioning of nuclear facilities and the management of associated materials and waste. It compiles recent experience from NEA member countries in radiological characterisation, including from international experts, international case studies, an international conference, and international standards and guidance. Using this comprehensive evidence base, the report identifies relevant good practice and provides practical advice covering all stages of the characterisation process (November 2017, 100 pages). View or download at <http://www.oecd-nea.org/rwm/pubs/2017/7373-rad-char-pers.pdf>.

Studies of Risk and Dose Assessment models for Radioactively Contaminated Soil at Sites. A participant for the Oak Ridge Institute for Science and Education Research Participation Program, Nasser Shubayr, while at EPA's Office of Superfund Remediation and Technology Innovation has produced three research documents on risk and dose assessment models recommended by governmental agencies for investigating radioactively contaminated sites.

1. Overview of Radiation Risk and Dose Assessment Models for Radioactively Contaminated Sites and Selected Default Input Parameters. This document presents an overview of radiation risk and dose assessment models for several national and international agencies, including the exposure scenarios and pathways and review of selected default input parameters used by each model. The objective of this overview is to make recommendations on technical and practical issues to the U.S. EPA Office of Superfund Remediation and Technology Innovation (OSRTI), facilitating better understanding of each agency's modeling approach and identifying the similarities and differences between these agencies in the risk and dose assessment of radioactively contaminated sites.
2. Handbook of Parameters for U.S. and International Governments Risk and Dose Assessment Models for Remediation of Radiologically Contaminated Soil (PRG/DCC, RESRAD, NORMALYSA, RCLEA, RSRARS, WISMUT and NCRP). This document shows a brief overview for the following models: PRG/DCC, RESRAD- ONSITE, NORMALYSA, RCLEA, RaSoRs, WISMUT and NCRP, and lists all input parameters used by these models. This document can be used as a parameters reference for modelers.
3. Study of Chemical and Radiation Risk Assessment Methods for the United States Environmental Protection Agency and the United Kingdom Environment Agency. This paper studies the US EPA and the UK EA methodological consistency between chemical and radiation risk assessment models. The paper shows: 1) key similarities and differences between the US EPA models, PRG and RSL calculators, 2) key similarities and differences between the UK EA models, RCLEA and CLEA, and 3) the consistency between the US EPA and the UK EA in their approaches for chemical and radiation risk assessment for contaminated sites.

The three research studies are available at https://epa-prqs.ornl.gov/radionuclides/prg_comparison.html.

EPA Office of Research and Development Journal Article: An Overview of Geophysical Technologies Appropriate for Characterization and Monitoring at Fractured-Rock Sites.

The complex structure of fractured-rock aquifers poses an enormous challenge for groundwater remediation professionals. The efficacy of geophysical methods at these sites is hindered by the lack of planning tools that assess their applicability given site specific conditions and objectives for clean-up. Synthetic modeling or "pre-modeling" represents a powerful approach to understanding the capabilities and limitations of geophysical methods to achieve different site clean-up objectives. Although synthetic modeling tools are available and widely used in research, applications in the environmental industry are uncommon. In this study, researchers (1) provide an overview of geophysical methods applied to characterizing and monitoring fractured-rock aquifers; (2) review case studies showcasing different geophysical methods; and (3) discuss best practices for choice of method based on synthetic modeling and decision support tools. Learn more at

https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=338193.

EPA Office of Research and Development Journal Article: Evidence of a Sewer Vapor Transport Pathway at the USEPA Vapor Intrusion Research Duplex.

Although some previous site remediation efforts have highlighted the importance of sewer lines in transporting VOCs, sewer lines are not routinely sampled during most vapor intrusion investigations, and their role as pathways for vapor intrusion are poorly understood. Researchers used tracer study and VOC concentration measurements to evaluate the role of the combined sanitary/storm sewer line in transporting VOCs at the USEPA vapor intrusion research duplex in Indianapolis, Indiana. The results from the tracer study demonstrated the migration of gas from the sewer main line into the duplex. The migration pathway appears to be complex and may include leakage from the sewer lateral at a location below the building foundation. These results combined with results from the prior multi-year study of the duplex suggest sewer lines should be routinely evaluated as part of these investigations. Learn more at

https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=336799.

Superfund Research Program (SRP) Research Briefs. 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:

- Pilot-Scale Demonstration of In Situ Chemical Oxidation Involving Chlorinated Volatile Organic Compounds: Design and Deployment Guidelines, Parris Island, SC, Marine Corps Recruit Depot, Site 45 Pilot Study
- Field Application of Emerging Composite Sampling Methods
- Soil Washing Bench Scale Treatability Study Work Plan, Offsite Properties Within the Exide Preliminary Investigation Area
- Per- and Polyfluoroalkyl Substances (PFAS): Sampling Studies and Methods Development for Water and Other Environmental Media: Technical Brief
- Enhanced Anaerobic Oxidative Bioremediation
- Horizontal Remediation Wells
- SERDP and ESTCP Workshop on Research and Demonstration Needs for Management of AFFF-Impacted Sites
- Demonstration and Commercialization of the Sediment Ecosystem Assessment Protocol (SEAP): ESTCP Cost and Performance Report

- Evaluating Long-Term Impacts of Soil-Mixing Source-Zone Treatment Using Cryogenic Core Collection
- Contaminant Flux Reduction Barriers for Managing Difficult-to-Treat Source Zones in Unconsolidated Media
- Validation of Passive Sampling Devices for Monitoring of Munitions Constituents in Underwater Environments
- Predicting DNAPL Source Zone and Plume Response Using Site-Measured Characteristics
- Remediation Management of Complex Sites
- Investigative Strategies for Lead-Source Attribution at Superfund Sites Associated with Mining Activities
- Flux-Based Groundwater Assessment and Management

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 60 resources, events, projects and news items were added to EUGRIS in November 2017. 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:

Soil Screening Values for Assessing Ecological Risk (2017 UK Environment Agency) . This project has produced guidelines for screening the risks to soils from chemicals released through the landspreading of waste-derived materials.

The project reviewed the available evidence on the direct terrestrial ecotoxicity and potential for secondary poisoning of 38 chemical substances and mixtures, including 23 trace elements and 15 persistent organic pollutants. View or download at <https://www.gov.uk/government/publications/soil-screening-values-for-assessing-ecological-risk>

> Conferences and Symposia

Registration Now Open! 2017 National Brownfields Training Conference, Pittsburgh, PA, December 5-7, 2017. With the session selection process completed, Brownfields 2017 is set to offer attendees a robust and expansive conference experience. This year's conference programming and speakers will engage attendees on topics at the forefront of today's brownfields and economic development landscapes; challenging both emerging and seasoned professionals as well as a diverse range of brownfields stakeholders to think outside the norms when addressing land revitalization and redevelopment. Take advantage and register during the pre-registration period for the lowest conference registration fees. For more information and to register, see <https://www.brownfields2017.org/register/>.

Implementing Greener Cleanups Through ASTM's Standard Guide (E2893-16) - A Workshop, Pittsburgh, PA, December 4, 2017. This 90-minute training session is one of three comprising the "Streamlined Practices for Brownfields Site Characterization and Cleanup" pre-conference workshop offered at Brownfields 2017. The session will focus on helping participants engage communities in site cleanup decisions and transforming contaminated sites into community assets while using the core elements of green remediation-energy, air, water, materials and waste, and land and ecosystems. Participants will learn the methods and tools for reducing a project's environmental footprint, the importance of a footprint assessment, how to apply science and engineering principles at a site, and best management practices for site optimization. Green remediation application case studies along with lessons learned will be presented. For more information and to register, see <https://www.brownfields2017.org/education/pre-conference-workshops/>.

Improving Management of the Brownfields Cleanup Process: Follow the Road Map, Pittsburgh, PA, December 4, 2017. This 90-minute training session is one of three comprising the "Streamlined Practices for Brownfields Site Characterization and Cleanup" pre-conference workshop offered at Brownfields 2017. The session is designed to help Brownfields grant recipients, who are often non-technical stakeholders, learn how to better find and hire the right contractor, integrate innovation, interpret technical reports, prepare contracts, manage the budget, monitor progress, and become more involved in the decision-making process. Grantees will learn to oversee the process for gathering and using environmental data to ensure the data is adequate and appropriate to make a decision. For more information and to register, see <https://www.brownfields2017.org/education/pre-conference-workshops/>.

Innovative Brownfields Characterization and Cleanup Solutions: Training for Small Business Contractors, Pittsburgh, PA, December 4, 2017. This 90-minute training session is one of three comprising the "Streamlined Practices for Brownfields Site Characterization and Cleanup" pre-conference workshop offered at Brownfields 2017. The session will provide information about innovative technologies and practices for improving and achieving cleanup at Brownfields sites. Participants will learn the application and tools necessary to implement for innovative practices such as incremental composite sampling, high-resolution site characterization, three dimensional visualization and analysis, and the use of conceptual site models to help reduce uncertainties in site cleanup and communicate site conditions better to all stakeholders. Topics will include in situ remediation technologies such as thermal treatment, chemical oxidation/reduction, and enhanced bioremediation. Participants also will learn the use of field tools to assist in the creation of dynamic work plans to allow for-and achieve-faster site cleanup. For more information and to register, see <https://www.brownfields2017.org/education/pre-conference-workshops/>.

Groundwater High-Resolution Site Characterization (HRSC), Tallahassee, FL, January 30-31, 2018. 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 <https://trainex.org/hrsc>.

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 Jean Balent at (703) 603-9924 or balent.jean@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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