U.S. ENVIRONMENTAL PROTECTION AGENCY

TechDirect, January 1, 2022

Happy Holidays and may you have a prosperous new year! Welcome to TechDirect! Since the December 1 message, TechDirect gained 56 new subscribers for a total of 40,075. 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.

> EPA to Fund Superfund Backlog

EPA Announces Plans to Use First $1B from Bipartisan Infrastructure Law Funds to Clear Out the Superfund Backlog. The U.S. Environmental Protection Agency (EPA) announced a $1 billion investment from the Bipartisan Infrastructure Law to initiate cleanup and clear the backlog of 49 previously unfunded Superfund sites and accelerate cleanup at dozens of other sites across the country. Until this historic investment, many of these were part of a backlog of hazardous waste sites awaiting funding. Thousands of contaminated sites exist nationally due to hazardous waste being dumped, left out in the open, or otherwise improperly managed. These sites include manufacturing facilities, processing plants, landfills and mining sites. The $1 billion investment is the first wave of funding from the $3.5 billion in the Bipartisan Infrastructure Law to help clean up polluted Superfund sites in communities. The backlog of previously unfunded sites that will now be receiving funding are in 24 states and territories and all 10 EPA regions, including some communities who have been waiting for cleanup for more than four years. For more information and to see a list of the 49 sites to receive funding for new cleanup projects, please visit:
https://www.epa.gov/superfund/superfund-sites-new-construction-projects-receive-bipartisan-infrastructure-law-funding

> Upcoming Live Internet Seminars

Use of Remedial Action Levels and Cleanup Levels with Contaminated Sediment Management - Jan 6, 2022, 2:00PM-3:30PM EST (19:00-20:30 GMT). The purpose of this talk is to understand what Remedial Action Levels (RALs) are and how they are

used at contaminated sediment sites. The presentation will also discuss how RALs differ from cleanup levels, and how both are used in the cleanup process. RALs represent concentrations that trigger active construction for sediment cleanup. This can consist of different combinations of dredging, capping, enhanced natural recovery, and monitored natural recovery to address contaminated material at Superfund Sediment Sites and reduce contaminant exposure to human health and the environment. Cleanup levels typically are concentrations that would not pose unacceptable risks to human health and the environment. For more information and to register, please visit https://clu-in.org/live/

ITRC Remediation Management of Complex Sites - Jan 11, 2022, 1:00PM-3:15PM EST (18:00-20:15 GMT). At some sites, complex site-specific conditions make it difficult to fully remediate environmental contamination. Both technical and nontechnical challenges can impede remediation and may prevent a site from achieving federal- and state-mandated regulatory cleanup goals within a reasonable time frame. For example, technical challenges may include geologic, hydrogeologic, geochemical, and contaminant-related conditions as well as large-scale or surface conditions. In addition, nontechnical challenges may also play a role such as managing changes that occur over long time frames, overlapping regulatory and financial responsibilities between agencies, setting achievable site objectives, maintaining effective institutional controls, redevelopment and changes in land use, and funding considerations. For more information and to register, please visit https://itrcweb.org/ or https://clu-in.org/live/

ITRC Vapor Intrusion Mitigation (VIM-1) - A Two Part Series - Jan 13 & 27, 2022, 1:00PM-3:00PM EST (18:00-20:00 GMT). When certain contaminants or hazardous substances are released into the soil or groundwater, they may volatilize into soil gas. Vapor intrusion (VI) occurs when these vapors migrate up into overlying buildings and contaminate indoor air. ITRC has previously released guidance documents focused on VI, including the "Vapor Intrusion Pathway: A Practical Guidance" (VI-1, 2007) and "Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management" (PVI, 2014). However, ITRC has received multiple requests for additional details and training on mitigation strategies for addressing this exposure pathway. The ITRC Vapor Intrusion Mitigation Team (VIMT) created ten fact sheets, 16 technology information sheets, and 4 checklists with the goal of assisting regulators during review of vapor intrusion mitigation systems, and helping contractors understand the essential elements of planning, design, implementation, and operation, maintenance and monitoring (OM&M) of mitigation systems. The Vapor Intrusion Mitigation training is a series of eight (8) modules, presented over two sessions. For more information and to register, see https://www.itrcweb.org or https://clu-in.org/live.

Unlocking Brightfields Potential: State Programs to Encourage Renewable Energy Siting on Contaminated Lands - RE-Powering America's Land Initiative - Jan 24, 2022, 1:00PM-2:30PM EST (18:00-19:30 GMT). EPA's RE-Powering America's Land Initiative ("RE-Powering") is hosting a webinar to help you learn about state-based programs to increase renewable energy projects on landfills, brownfields, mines, and other contaminated lands. In the webinar, you will learn about common types of state programs, program impacts, steps to select and design successful programs, and program implementation tips. For more information and to register, please visit https://clu-in.org/live/

Site Redevelopment? There's an App for That - Superfund Redevelopment Mapper Training - Jan 26, 2022, 1:00PM-3:00PM EST (18:00-20:00 GMT). EPA's new Superfund Redevelopment Mapper is an interactive tool that provides information related to reuse and redevelopment on and near Superfund sites. This webinar will review how the tool highlights key data stakeholders need to plan for future Superfund site use. Data layers in the tool include key environmental, population and infrastructure data for identifying and analyzing redevelopment opportunities and potential

environmental justice concerns at or near Superfund sites. This webinar will include an interactive training on how to use the tool in a variety of scenarios. For more information and to register, please visit https://clu-in.org/live/

ITRC 1,4-Dioxane: Science, Characterization & Analysis, and Remediation - Jan 25, 2022, 1:00PM-3:15PM EST (18:00-20:15 GMT). 1,4-Dioxane has seen widespread use as a solvent stabilizer since the 1950s. The widespread use of solvents through the 1980s suggests its presence at thousands of solvent sites in the US; however, it is not always a standard compound in typical analytical suites for hazardous waste sites, so it previously was overlooked. The U.S. EPA has classified 1,4-dioxane as "likely to be carcinogenic to humans." Some states have devised health standards or regulatory guidelines for drinking water and groundwater standards; these are often sub-part per billion values. These low standards present challenges for analysis, characterization, and remediation of 1,4-dioxane. The ITRC team created multiple tools and documents that provide information to assist all interested stakeholders in understanding this contaminate and for making informed, educated decisions. For more information and to register, please visit https://itrcweb.org/ or https://clu-in.org/live/

> New Documents and Web Resources

Green Remediation Best Management Practices: Bioremediation (EPA 542-F-21-028). In line with the renewed Agency emphasis on sustainability and climate change resilience and mitigation, the Superfund Program is proceeding to update the very popular green remediation best management practice (BMP) fact sheets for the most common remedies in the Superfund program. The goal of these fact sheets is to share technical information on best practices that build sustainability into contaminated site cleanup operations across the portfolio of remediation approaches. The green remediation (GR) fact sheet on bioremediation has been one of the most popular "GR factsheets," with over 11,000 downloads since it was first released. The updated fact sheet includes new BMPs gathered from projects across the country and describes how climate resilience is being built into our sites to ensure continued remedy protectiveness. The fact sheet also highlights synergies between green remediation and climate adaptation practices, where one action provides both greenhouse gas (GHG) mitigation and climate resilience. Examples are BMPs involving use of renewable energy, green infrastructure or carbon sequestering vegetation that mitigate GHG emissions and add resilience to ongoing climate change. The fact sheet also highlights how advanced practices gleaned from Superfund's optimization and technical support work, such as three-dimensional and high-resolution imaging techniques for site characterization, support more precise remedies with smaller environmental footprints. To view or download, please visit https://clu-in.org/greenremediation/docs/GR_factsheet_biorem_32410.pdf.

NAVFAC Fact Sheet on Environmental Molecular Diagnostics: Molecular Biology-Based Tools (September 2021). The NAVFAC Technology Transfer (T2) Program supports information sharing to identify the Navy's Environmental Restoration Program (ERP) challenges and to promote the use of innovative and cost-effective solutions. This fact sheet was produced by NAVFAC to discuss Environmental molecular diagnostics (EMDs). EMDs are a group of advanced techniques used to analyze biological and chemical characteristics of environmental samples. This fact sheet focuses on biological tools for use in environmental restoration applications. EMDs based on biological techniques rely on the analyses of genetic material or compounds produced by microbes. The tools discussed include quantitative polymerase chain reaction (qPCR), metagenomic sequencing of the 16S ribosomal RNA gene, whole genome sequencing, and proteomics. Two Navy case studies

provide specific examples of how data can be used to characterize and quantify the changes in the microbial communities over time. To view of download, please visit https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er_pdfs/e/EMD%20Molecular%20Biology%20Based%20Tools%20Fact%20Sheet%2030SEP21%20FINAL%20Rev2.pdf.

Superfund Research Program Technology Profile on Solar-Powered Material-Microbe Interface to Accelerate Bioremediation. Researchers at the University of California (UC), Riverside and UC Los Angeles are exploring how nanomaterials powered by solar electricity can accelerate the activity of bacteria used to clean up halogenated contaminants such as chlorinated solvents, per- and polyfluoroalkyl substances (PFAS), and 1,4-dioxane in groundwater. For more information, please visit https://www.niehs.nih.gov/research/supported/centers/srp/science_digest/2021/12/technology/.

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:

- Western Sector In-Situ Chemical Oxidation Project: Additional Injection Pilot Testing Supplemental Results
- Biotransformation and Potential Mineralization of PFOS, PFHXS, and PFOA by Acidimicrobiaceae Sp. A6 Under Iron Reducing Conditions
- Key Fate and Transport Processes Impacting the Mass Discharge, Attenuation, and Treatment of PFAS and Comingled Chlorinated Solvents or Aromatic Hydrocarbons
- Performance of Water Treatment Systems for PFAS Removal
- EPA Advances Science to Protect the Public from PFOA and PFOS in Drinking Water
- Development of a Quantitative Framework for Evaluating Natural Attenuation of 1,1,1-TCA, 1,1-DCA, 1,1- DCE, and 1,4-Dioxane in Groundwater
- New Passive Sampling Device for PFAS
- Ultrahigh-Resolution Fourier-Transform Ion Cyclotron Resonance Mass Spectrometry for Fingerprinting, Source Tracking, and Allocation of Per- and Polyfluoroalkyl Substances (PFASS)
- Demonstrating a Biogeophysics Strategy for Minimally Invasive Post Remediation Performance Assessment

ITRC 2022 Team Registration Now Open. The ITRC 2022 Project Teams are officially open for registration! Four all-new project teams will join continuing ITRC teams currently open for registration. Interested parties may register for the new teams or look to join the ongoing teams. ITRC Teams for 2022 Include: Managed Aquifer Recharge, Ethylene Oxide Emissions, Sediment Cap Update, Chemicals of Emerging Concern, PFAS, Environmental Data Management Best Practices, Pump & Treat Optimization, and Quickening Environmental Solutions & Training (QUEST). For more information, please visit https://itrcweb.org/teams/active.

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than eight resources, events, projects and news items were added to EUGRIS in December 2021. 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.

> Conferences and Symposia

Save the (New) Dates! 2022 National Brownfields Training Conference - Oklahoma City, OK, August 16-19, 2022. The National Brownfields Training Conference is the largest event in the nation focused on environmental revitalization and economic redevelopment. Held every two years, the National Brownfields Conference attracts over 2,000 stakeholders in brownfields redevelopment and cleanup to share knowledge about sustainable reuse and celebrate the EPA brownfields program's success. Whether you're a newcomer or a seasoned professional, Brownfields 2021 offers something for you! For more information, please visit https://brownfields2021.org

2022 Environmental Measurement Symposium - Crystal City, VA, August 1-5, 2022. The Environmental Measurement Symposium (EMS) is the combined meeting of the National Environmental Measurement Conference (NEMC) and the Forum on Environmental Accreditation. The theme of the 2022 conference is Where Do We Go From Here? The Conference will include: a Technical Program featuring oral and poster presentations, a special half-day general session with a keynote speaker focused on the conference theme and updates from EPA program offices, special keynote presentations on the conference theme, and luncheon presentations; an Exhibit Program showcasing the latest innovations in environmental monitoring; and an Innovative New Technology Showcase. For more information, please visit https://www.envirosymposium.group/index.php

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.
