

TechDirect, January 1, 2010

Happy Holidays and may you have a prosperous new year! Welcome to TechDirect! Since the December 1 message, TechDirect gained 215 new subscribers for a total of 35,151. 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 ground water.

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

EPA NNEMS Fellowship 2010 Program Solicitation - January 8, 2010, 1:00PM-2:30PM EST (18:00-19:30 GMT). The Environmental Protection Agency's National Network for Environmental Management Studies (NNEMS) Fellowship Program started in 1986 to foster a growing interest in environmental careers among higher education students. The competitive solicitation for the 2010 summer program is currently open and closes on February 5, 2010 (see <http://www.epa.gov/enviroed/NNEMS/2010apply.html>). Instructors for the live 1.5-hour webinar will provide an overview of the program, identify eligibility requirements, discuss the application process and the evaluation and selection process, highlight some of the projects in the 2010 NNEMS catalog, and review some of the most frequently asked questions by student applicants. Time will be set aside to answer participant questions. For more information and to register, see <http://clu-in.org/live> .

ITRC Use of Risk Assessment in Management of Contaminated Sites - January 12, 2010, 2:00PM-4:15PM EST (19:00-21:15 GMT). This training course identifies how various risk-based approaches and criteria are applied throughout the processes of screening, characterization, and management of contaminated sites. The training course and associated overview document, Use of Risk Assessment in Management of Contaminated Sites (RISK-2, 2008), are intended for risk assessors and project managers involved with the characterization, remediation, and/or re-use of sites. The training and overview document provide a valuable tool for federal and state regulatory agencies to demonstrate how site data collection, risk assessment, and risk management may be better integrated. For more information and to register, see <http://www.itrcweb.org> OR <http://clu-in.org/live> .

ITRC Perchlorate Remediation Technologies - January 14, 2010, 11:00AM-1:15PM EST (16:00-18:15 GMT). This training introduces state regulators, environmental consultants, site owners, and community stakeholders to Remediation Technologies for Perchlorate Contamination in Water and Soil (PERC-2, 2008), created by ITRC's Perchlorate Team to assist reviewers in assessing the adequacy of perchlorate remediation projects. This course gives the student a background in the available

remediation technologies to treat perchlorate contamination, discusses emerging technologies, and presents case studies of applications. For more information and to register, see <http://www.itrcweb.org> Or <http://clu-in.org/live> .

ESTCP Funding Opportunities Webinar, January 15, 1:00PM-2:00PM EST (18:00-19:00 GMT). This webinar will provide a summary of the Environmental Security Technology Certification Program (ESTCP) funding opportunities for innovative environmental and energy technology demonstrations. This "how to play" briefing will offer valuable information for those who wish to understand the ESTCP solicitation process and new funding opportunities. The ESTCP solicitation is scheduled to be released on January 7, 2010 and attendees may use the seminar to ask general questions about the solicitation. The ESTCP web site (www.estcp.org/opportunities) will provide the topic areas and pre-proposal instructions for the ESTCP Solicitation once released. **Pre-registration for this webinar is required.** Go to www.estcp.org/webinar-registration.cfm to register. If you have any difficulties registering, please contact Jonathan Bunger in the Program Office at Jonathan.Bunger.ctr@osd.mil or by telephone at 703-696-2126.

Taking to the Superfund Skies: A Look at the Academy of Model Aeronautics and Superfund Redevelopment Initiative Partnership - Your Input for Future Directions - January 21, 2010, 2:00PM-4:00PM EST (19:00-21:00 GMT). This seminar will highlight the partnership between the Superfund Redevelopment Initiative (SRI) and the Academy of Model Aeronautics (AMA). Since 2005, this partnership has linked AMA with interested Superfund communities, providing much-needed flying fields for aeromodelers and responsible long-term stewards for Superfund sites. EPA and AMA presenters will discuss how the partnership came about and how it has evolved since its inception. The majority of the webinar will focus on stories of specific sites that currently serve as flying fields. Presenters will offer insights into factors allowed for the site's reuse, the role each party involved (AMA Club, EPA, and site owner) played and continues to play at the site, impacts of the site's reuse on the community, and key benefits of the reuse of these sites. For more information and to register, see <http://clu-in.org/live> .

Superfund Research Program Strategic Planning - Your Input for Future Directions - January 25, 2010, 2:00PM-4:00PM EST (19:00-21:00 GMT). The Superfund Research Program (SRP) funds basic and applied research addressing health effects, risk assessment, detection and remediation of hazardous substances. After over 20 years of progress, the SRP is undergoing a strategic planning process to develop a framework for prioritization of activities over the next 5-10 years and to enhance the impact of the Program. The purpose of this information session is to receive input from SRP's stakeholders about the future direction of the Program. The session will feature a moderated discussion period framed by a series of questions addressing the scope of SRP science, training, translation, and outreach. We encourage participation by officials from sister Superfund agencies US EPA and ATSDR, as well as representatives of local, state, tribal governments, non-profit organizations, universities, and practicing environmental professionals. For more information and to register, see <http://clu-in.org/live> .

Implementation of Triad for Petroleum Brownfield's Cleanup and Reuse - January 26, 2010, 12:00PM-1:30PM EST (17:00-18:30 GMT). This presentation features the redevelopment of a former Petroleum Bulk Terminal into residential reuse in Alexandria, VA. The site operated as a fuel depot since the late 1800's. Environmental work began in the early 1980's with a reported release. In the early 2000's, the Triad philosophy was adopted. The property has since been redeveloped into town homes and flats with a below-grade parking structure. The discussion will include the process from investigation up to redevelopment and the perspective of State DEQ and City Office of Environmental Quality. For more information and to register, see <http://clu-in.org/live> .

ITRC Performance-based Environmental Management - January 26, 2010, 2:00PM-4:15PM EST (19:00-21:15 GMT). Performance-based environmental management (PBEM) is a strategic, goal-oriented methodology that is implemented through effective planning and decision logic to reach a desired end state of site cleanup. The goal of PBEM is to be protective of human health and the environment while efficiently implementing appropriate streamlined cleanup processes. This ITRC training presents an overview of what PBEM is, explains how and when to implement it, and describes the issues that regulators are concerned about throughout PBEM's implementation. Case studies will be presented to illustrate successful PBEM projects. The course is valuable not only because PBEM is being proposed and implemented at many federal and private sites throughout the country, but also because PBEM provides an opportunity to enhance all site remediation. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

ITRC Quality Considerations for Munitions Response Projects - January 28, 2010, 11:00AM-1:15PM EST (16:00-18:15 GMT). This training introduces state regulators, environmental consultants, site owners, and community stakeholders to Quality Considerations for Munitions Response Projects (UXO-5, 2008), created by the ITRC's Unexploded Ordnance (UXO) Team. In this document, quality is defined as "conformance to requirements." To manage quality, the quality requirements of the project must first be understood. Requirements must be precisely stated and clearly understood by everyone involved. A plan is then put in place to meet those requirements. The UXO Team emphasizes taking a whole-system approach to designing, planning and managing a munitions response (MR) project to optimize quality. This training course is intended for an intermediate audience and assumes a basic understanding of specialized processes associated with MR projects. For more information and to register, see <http://www.itrcweb.org> or <http://clu-in.org/live>.

> New Documents and Web Resources

New CLU-IN Evapotranspiration Covers Site. This site focuses on covers that utilize natural processes to manage water precipitating on waste containment sites, commonly known as evapotranspiration (ET) covers. These covers have proven an effective means of containing waste at municipal landfills, hazardous, and industrial waste landfills. ET covers are also known as store and release covers, vegetative covers, sponge and pump covers, alternative final covers (AFC), alternative final earthen covers (AFEC), and other names. They include various combinations of earthen materials and plants. View and use at <http://www.clu-in.org/products/evap/>.

Assessing the Use and Application of Zero-Valent Iron Nanoparticle Technology for Remediation at Contaminated Sites. This document was prepared by Sean M. Cook, a National Network for Environmental Management Studies (NNEMS) grantee under a fellowship from the U.S. Environmental Protection Agency. The main focus of this paper is discussing the use of zero-valent iron nanoparticles. Due to its unique properties, this manufactured nanoparticle is able to effectively eliminate or neutralize certain recalcitrant pollutants that can be found in aquatic environments (e.g., groundwater aquifers). Nanoscale zero-valent iron (NZVI) particles are typically 5-40 nm sized Fe⁰/Fe-oxide particles that rapidly transform many environmental contaminants to benign products and are a promising in situ remediation agent. Due to their small size and increased reactivity, these manufactured nanoparticles have the potential to be more effective than the microscale ZVI that is already in use for contaminant remediation in soil and groundwater aquifers. However, little is known about the environmental fate of these nanomaterials once they have undergone biological and

non-biological processes within a contaminated aquifer. For this reason, it is important to find out what the possible impacts of these nanomaterials are once they enter the environment and how they could potentially affect human health or the environment. Despite these concerns, NZVI technology and its application are a very promising, efficient and cost-effective method for remediating contaminated soil and groundwater aquifer sites (August 2009, 39 pages). View or download at <http://www.clu-in.org/techpubs.htm> .

Fate, Transport, and Toxicity of Nanoscale Zero-Valent Iron (nZVI) Used During Superfund Remediation. This document was prepared by Emily Keane, a NNEMS grantee under a fellowship from the U.S. Environmental Protection Agency. The goal of this document is to provide information about the fate, transport, and toxicity associated with the use of nanoscale zero-valent iron (nZVI) for Superfund remediation. Specific and unique site conditions are likely to determine the usefulness and influence the fate and transport of nZVI particles during remediation efforts. Factors to consider prior to application include: effects of geochemistry on the mobility of nanoparticles, use of metal catalysts and coatings on the movement of nZVI particles and other variables affecting the fate and transport of nZVI in the environment. Other considerations include potential environmental and human health effects as a result of the fate and transport of nZVI in the environment (August 2009, 38 pages). View or download at <http://www.clu-in.org/techpubs.htm> .

Solar Power Installations on Closed Landfills: Technical and Regulatory Considerations. This document was prepared by Gabriel Sampson, a NNEMS grantee under a fellowship from the U.S. Environmental Protection Agency. This paper examines the current nature of solar energy developments on closed landfills using the following focal areas: (1) solar power system considerations with respect to landfill applications, (2) landfill technical and engineering considerations, and (3) regulatory considerations. Research results indicate that numerous engineering techniques and solar technologies are available to facilitate the placement of solar energy systems on closed landfills. Results also indicate that the permitting and regulatory process is complicated by disparate but specific state and local government requirements. Though this study focuses narrowly on the technical and regulatory affairs of constructing solar farms on closed landfills, it also has applications to the placement of solar energy systems in broader settings. The views detailed in this study are designed to inform decision makers and stakeholders and to facilitate the design, construction, and operation of future solar installations on closed landfills (September 2009, 36 pages). View or download at <http://www.clu-in.org/techpubs.htm> .

Technology News and Trends (EPA 542-N-09-006). This issue highlights innovative strategies for in-situ treatment of contaminated groundwater through subsurface injection of reagents to promote chemical oxidation (chem/ox) or biodegradation through enhanced reductive chlorination of contaminants (December 2009, 6 pages). View or download at <http://clu-in.org/techpubs.htm> .

Green Remediation Best Management Practices: Site Investigation (EPA 542-F-09-004). The U.S. EPA Principles for Greener Cleanups outline the Agency's policy for evaluating and minimizing the environmental "footprint" of activities undertaken when cleaning up a contaminated site. Use of the best management practices (BMPs) recommended in EPA's series of green remediation fact sheets can help project managers and other stakeholders apply the Principles on a routine basis, while maintaining the cleanup objectives, ensuring protectiveness of a remedy, and improving its environmental outcome. Site investigations typically involve sampling of soil and groundwater using various drilling and well installation technologies and analysis of samples at offsite laboratories. Investigations also may include sampling of sediment, surface water, soil gas, or indoor air; searching for underground storage tanks (USTs) or other buried objects; or evaluating demolition material containing asbestos, lead-based paint, or other toxic products (December 2009, 4 pages). View or

download at <http://clu-in.org/techpubs.htm> .

Green Remediation Best Management Practices: Pump and Treat Technologies (EPA 542-F-09-005). The U.S. EPA Principles for Greener Cleanups outline the Agency's policy for evaluating and minimizing the environmental "footprint" of activities undertaken when cleaning up a contaminated site. Use of the best management practices (BMPs) recommended in EPA's series of green remediation fact sheets can help project managers and other stakeholders apply the Principles on a routine basis, while maintaining the cleanup objectives, ensuring protectiveness of a remedy, and improving its environmental outcome. Pump and treat (P&T) technology typically is selected in a cleanup remedy to hydraulically contain contamination and/or restore an aquifer to beneficial use. Opportunities to reduce the energy and environmental footprint of a P&T remedy, which are available during site characterization and the remedy selection, design, construction, and operation phases, rely on effective planning and continual re-evaluation of P&T operations. Options for reducing the footprint vary based on the site conditions and cleanup objectives as well as the configuration and components of a planned or existing P&T system (December 2009, 4 pages). View or download at <http://clu-in.org/techpubs.htm> .

EUGRIS Corner. New Documents on EUGRIS, the platform for European contaminated soil and water information. More than 10 resources, events projects and news items were added to EUGRIS 1 - 24 December, 2009. 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 reports were featured on EUGRIS:

PROMOTE Verification Approach for Monitoring and Remediation Technologies in Soil and Groundwater Systems: Bringing Innovation to the Market (2008).

PROMOTE is a European project developing verification approaches for contaminated land technologies. CEN Workshop Agreement (CWA) 32 provides guidelines for the verification of specific products for site characterization, monitoring and remediation of soil and groundwater systems, as long as no European ETV system is in place. In particular, it specifies a reporting structure for verified vendor claims of products in these three technology areas. This CWA describes a procedure which will result in a report that contains verified elements. The report in turn provides a standardized set of key information about a specific technology undergoing the procedure. View or download at <http://www.promote-etv.org/media.php?mld=5910> .

COMMON FORUM and NICOLE Common Position Paper on Innovative Technologies (2009).

There are potentially millions of sites in the EU where land contamination could pose a risk to water resources, ecosystems, and/or human health. As a result over € 2,000 million is believed to be spent annually on site characterisation, risk management and remediation. Stakeholders are facing new challenges: the discovery of new sites or new types of pollution and an increased demand for land that is suitable for use. Without cost-effective and sustainable management of the land the environmental impact and the cost will only increase further. This paper proposes concrete actions to help turn this trend around, supporting both the European economy as well as common European efforts towards a better environment. View or download at http://www.nicole.org/documents/stream.aspx?o=2&fn=NICOLE_Docs_252.pdf .

> Conferences and Symposia

Green Cleanup Symposium, Philadelphia, PA, February 10-11, 2010. This symposium is a collaborative effort of the US Environmental Protection Agency, Drexel

University, University of Pennsylvania, City of Philadelphia, US Army Corps of Engineers, Wildlife Habitat Council, and the States of New Jersey, New York, Pennsylvania and Delaware. Join high level decision makers and the nation's leading thinkers on green cleanup and revitalization of waste sites to discuss: The ABC's of Sustainable Reuse; Cleaning up Properties While Using Green Practices; Cutting-edge Analysis and Tools for Long-term Cleanups; Initiatives Promoting Renewable Energy on Cleanup Sites; and Ecological Revitalization at Contaminated Properties. For more information and to register, see: <http://drexel.edu/cities/greencleanupsymposium.html> .

Preliminary Assessment and Site Inspection Training, Arlington, VA, March 2-4, 2010 and San Francisco, CA, March 9-11, 2010. This course provides participants with an introduction to the Superfund site assessment process and covers both the preliminary assessment and the site inspection phases of this process. The course is designed for individuals with little experience in the initial evaluation of hazardous waste sites and focuses on general considerations for sample plan development, reporting requirements and data evaluation. This course is open to EPA, state, tribal and contractor personnel who support site investigation programs. For more information and to register, see: <http://www.trainex.org/offeringslist.cfm?courseid=457> .

Vapor Intrusion Pathway: A Practical Guideline ITRC 2-day Classroom Training, Norfolk, VA, March 22-23, 2010. The ITRC 2-day Vapor Intrusion Pathway class is planned for three locations in 2010: Norfolk, Virginia (March 22-23); Boston, Massachusetts (area) (July 12-13); Atlanta, Georgia (October 4-5). Led by internationally recognized experts, this 2-day ITRC classroom training will enable you to learn the latest strategies to conduct site screening and investigations; determine what tools are appropriate to collect quality data and evaluate the results; apply multiple lines of evidence to ensure quality decision-making; build solutions for VI issues through understanding of mitigation options; and network with environmental professionals dealing with this interdisciplinary and complex pathway. Interactive learning with hands-on exhibits, classroom exercises, and frequent Q&A sessions will reinforce these course objectives and contribute to a practical understanding of this difficult pathway. For more information and to register, see <http://www.itrcweb.org/crt.asp> .

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. Currently there are 115 conferences and courses featured. 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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