



OFFICE OF RESEARCH AND DEVELOPMENT SUPERFUND AND TECHNOLOGY LIAISON (STL) REGION 9 NEWSLETTER

Winter 2012, Edition 58

Happy New Year, everyone! It's only been a couple of days since our home team, the San Francisco 49ers, missed out on a chance to play in the big one, the Super Bowl, but we're looking forward. What more can we do? A dropped punt is only a dropped punt, right? (!?!). Here at work, there are plenty of valuable work products coming out of EPA's labs, program offices and regions to cope with hazardous waste issues. And tech support is still there for those of us in the field as well. That's the purpose of this newsletter – to “not drop the ball” on these items – the latest in guidance, policy and tech support for Superfund, RCRA and Brownfields.

This quarter's newsletter contains a couple of articles on **joint EPA – DoD (Army) green projects** (waste to energy and renewables), a **workshop summary (phytotechnologies and water balance covers)**, some webpages to enhance our use of cleanup technologies, new info on **PPCPs**, and finally the latest on new documents and upcoming workshops and conferences. It's all here, so please take a look within these pages.

I'll remind the EPA folks in the reading audience that hazardous waste tech support is always available to you from your local regional tech support staff as well as the ORD labs. Call me for any inquiries you may have and hopefully we can get your problems solved. One final reminder: don't forget about the Tech Support Project “[Expertise Directory](#)” that is now online. With the Directory, the three Forums (Ground Water, Engineering and Federal Facilities) make it easy to access the right help from your peers. Click here: <http://epa.gov/tio/tsp/download/expertise.pdf> .

And.....good luck to the Patriots in the Super Bowl! (Who said that?!).

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STL Newsletter Archives:
<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

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NATIONAL NEWS

New Tools and Technologies

Joint EPA - DoD Project - Recovering Energy from Landfill Gas

(Edited from SERDP-ESTCP, Fall 2011 Newsletter
<http://cms.serdp-estcp.org/newsletters/fall-2011.html>)

The Department of Defense (DoD) owns and operates more than 100 landfills on its installations. These landfills produce waste gas streams containing methane at a wide range of concentrations that are typically vented to the atmosphere or destroyed via flaring. Flaring landfill gas wastes energy, while venting releases significant amounts of greenhouse gases. Many industrial processes including wastewater plants and coating operations also produce waste gas streams that contain methane, organics, and other potential energy sources that typically require energy intensive treatment processes to control emissions. Traditional combustion-based energy generation technologies cannot utilize most of these potential sources of energy.



(Courtesy of ESTCP Website)

Under the ESTCP project Joint Demonstration and Verification of the Performance of Microturbine Power Generation Systems Utilizing Renewable Fuels with the U.S. EPA's Environmental Technology Verification Program (EW-200823), Southern Research Institute (SRI) is demonstrating the FlexEnergy Powerstation™ FP250 (Flex) system, which utilizes landfill gas or other low quality waste fuels to provide efficient on-site power production. The demonstration at the 1st

Division Road landfill at Fort Benning, Georgia, is providing an independent third party evaluation of the system's energy production. This demonstration will characterize emissions from the Flex system, quantify emissions reductions relative to other systems, and document the economics of the Flex system and its performance as a landfill gas energy recovery system.

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<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

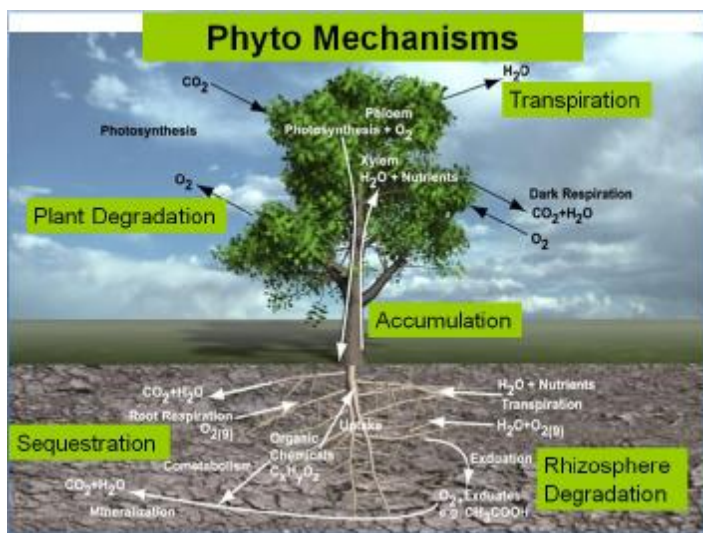
The potential utilization of landfill gas and other low quality waste fuels at DoD facilities can provide significant economic, environmental, and energy security benefits while contributing to the achievement of DoD’s stated goals and objectives for implementing renewable domestic energy production.

For the full story, click here -> <http://www.serdp-estcp.org/News-and-Events/In-the-Spotlight-Archive/Recovering-Energy-from-Landfill-Gas>

Summary: Introduction to Phytotechnologies and Water Balance (Evapotranspiration) Covers Workshop

December 14 & 15, 2011
San Francisco, CA

On December 14 & 15, 2011, Region 9 teamed up with ORD to present two days of training on Phytotechnologies and Water Balance Covers, with each taking a day. This two-day workshop, offered at the Region 9 offices in San Francisco, was intended to teach regulators, owners and operators, consultants, and engineers the basic principles for growing plant systems for environmental remediation, enhancement, and waste containment. Topics covered included alternative cover design, soil selection, construction, and monitoring, along with discussions of regulatory issues. Regional case studies were emphasized. The days' offerings were mutually exclusive, so the attendees were not the same each day, as their interests and needs varied.



(Courtesy of Steve Rock)

On day 1, a number of speakers provided background and practical engineering application information on phytotechnologies, including an overview, use for site remediation and wastewater management, current research and a global perspective on the topic. We heard from ORD's Steve Rock to kick things off. Then Amanda Ludlow, Wai Kwan, Scott Knoepke and Walt Eifert, all from Roux Associates, along with Norman Terry from University of California at Berkeley, provided presentations covering the topics mentioned above.

Day 2 was dedicated to discussions on water balance covers or what are sometimes called evapotranspiration caps. They can be considered a specific application of phytotechnologies. Among the speakers for day 2 were Drs. Craig Benson and Bill Albright. Dr. Benson is the Chair

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<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

of Civil and Environmental Engineering and Geological Engineering at the University of Wisconsin-Madison. Dr. Albright is Research Hydrogeologist at the Desert Research Institute of the Nevada System of Higher Education. ORD's Steve Rock and Jim Kelsey from Daniel B. Stephens and Associates rounded out the speakers for day 2.

All workshop documents can be found here -> <http://www.epa.gov/osp/hstl/stlworkshops.htm>
For more information, please contact Mike Gill (415-972-3054, gill.michael@epa.gov) or Steve Rock (513-569-7149, rock.steven@epa.gov).

NDCEE Demonstrates Technologies to Convert Waste to Energy

(From NDCEE Fall/Winter 2011 newsletter)

Between June and September 2011, the NDCEE conducted a series of demonstrations to evaluate four waste densification systems, two gasifiers, and a waste-to-energy (WTE) system. These technologies show real promise for net zero installation initiatives and could help contingency operations lower their fuel and waste logistical burden, which in turn reduces the potential for insurgent attacks on convoys.



For more information on the NDCEE densification, gasifier, and WTE demonstrations, please contact:

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(For complete story, go to page 8 of the newsletter ->
http://www.ndcee.ctc.com/newsletters/Fall_2011_newsletter.pdf)

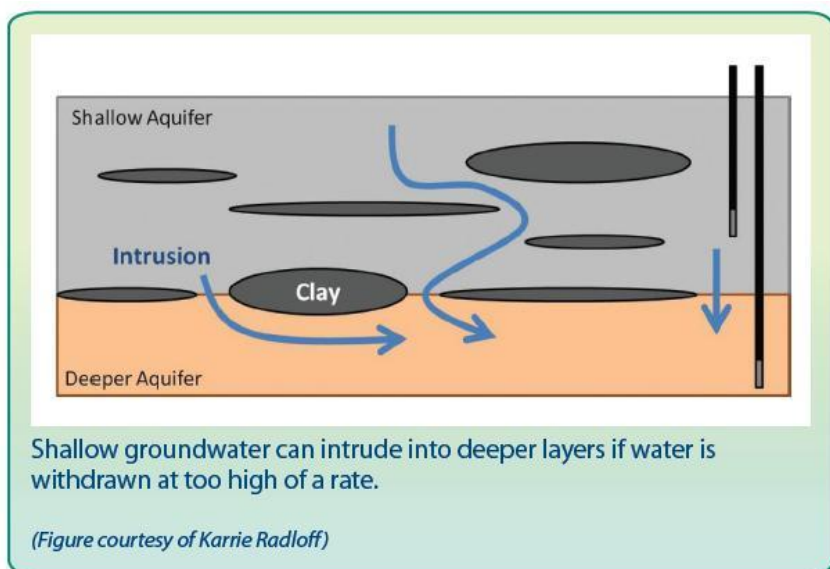
Research Shows Arsenic Attaches to Sediments, Protects Human Health

(Edited from SRP Research Brief 203 summarizing work at Columbia University)

Elevated arsenic concentrations are common in wells across South and Southeast Asia, and their role as a primary source of drinking water has led to large-scale arsenic poisoning across the region. To lower exposure, the use of deep-water wells, which have much lower arsenic concentrations, has increased considerably. However, recent surveys of deep (>150m) hand-pumped wells have shown that ~15% of those in Bangladesh and ~25% of those in the most contaminated areas of West Bengal contain arsenic (As) in concentrations >10 µg/L, the World

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<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

Health Organization’s (WHO) guideline and EPA’s maximum contaminant level allowed in public water supplies. The proportion of large scale public water supply systems in West Bengal drawing from these deeper aquifers that do not meet the WHO guideline is even higher.



Closer to home, arsenic poses a challenge across the United States as well. Arsenic is the second most common contaminant at Superfund sites, and is also present at other contaminated sites, such as old, unlined landfills. Plumes of groundwater contamination, including arsenic, move through the subsurface over time, and can pose a threat to nearby water sources.

(Courtesy of NIEHS SRP)

In addition, nearly 43 million Americans use private wells for their primary source of drinking water, and up to a quarter of these may be contaminated with naturally occurring contaminants, including arsenic which is found at concentrations above the MCL in 7% of wells.

Over the past decade, the Columbia University Superfund Research Program has been conducting extensive research into the health effects and remediation of elevated arsenic levels in groundwater (see Research Briefs 113, 120, 187, and 193). Karrie Radloff, a recent PhD graduate, and her advisors have been studying arsenic mobilization in the aquifers of Bangladesh. Their latest research addresses a concern that the use of deep-water wells could cause arsenic-laden water from shallower aquifers to contaminate aquifers tapped by deeper wells.

Significance

The results from this study are significant on several fronts. First, this work illustrates the need for combining batch adsorption studies above ground with *in situ* field experiments to increase our understanding of the processes that regulate contaminant transport. Second, the new estimates of how much As is retained on sands by adsorption needs to be taken into account to predict the effectiveness of pump-and-treat operations at numerous US Superfund sites where arsenic is a common contaminant. Third, this study illustrates the vulnerability of groundwater

aquifers to increased water demands and the need for comprehensive management to limit the degradation of groundwater quality.

To read the complete article and more, click here ->

http://tools.niehs.nih.gov/srp/1/ResearchBriefs/PDFs/SRP_ResearchBrief_203.pdf

[Harnessing Water, Waste and Energy Systems for Sustainability](#)

(From NRMRL Monthly, November 2011)

EPA is working to show how green water strategies can impact municipal life where drinking water, wastewater, and energy systems interrelate. Drinking water, wastewater, and energy are three totally interrelated systems in municipal life. Based on this fact, an interdisciplinary research project, cooperatively sponsored by EPA, is evaluating the three systems and their potential links to sustainable technologies. A key goal of the project is to show how green water strategies of decentralization, recovery, and reuse can be matched with energy conservation strategies to create sustainable green buildings.

Many communities are facing challenges of population growth and rising energy costs in the face of diminishing water resources and aging water delivery systems. Although environmental experts have long recognized that Americans must adopt new water and energy conservation methods to ensure a sustainable future, most communities still treat large volumes of water to the highest potable (drinking) water standards and then use much of that treated water for non-potable needs. These include fire fighting, landscape watering, toilet flushing, street cleaning and similar uses. In addition, the quantity and pressure requirements for fire-fighting typically dictate large pipe diameters and storage tanks, causing long standing times with favorable conditions for biological contamination. Finally, the large volumes of a municipal water supply generate large volumes of wastewater, which require energy-consuming treatment before disposal. These interrelated issues are evident at both the building and the community level. EPA is evaluating a series of innovative green water/green building strategies that propose changes in the ways in which communities currently use water and energy resources. The project, supported in part by EPA, addresses three main strategies--water and wastewater, energy, and green buildings--with corresponding tasks for each.

For the complete story, click here ->

<http://www.epa.gov/nrmrl/news/112011/news112011.html>

NDCEE Workshop Helps Army Launch Net Zero Installation Initiative

(From NDCEE Fall/Winter 2011 newsletter and EPA's Leslie Gillespie-Marthaler)



In April 2011, the Honorable Katherine Hammack, Assistant Secretary of the Army for Installations, Energy, and Environment (ASAIE&E), launched the Army Net Zero Installation Initiative. The goal of the initiative is to appropriately manage natural resources and address the significant threats to energy and water supplies at home and abroad as well as managing Army installations to net zero in terms of energy, water, and waste. The Army is creating a culture that recognizes the value of sustainability measured not just in terms of financial benefits, but benefits from maintaining

mission capability, quality of life, relationships with local communities, and preservation of options for the Army's future. The EPA wants to better understand the challenges associated with limited resource allocation, management, and associated impacts to human health and the environment on military bases and surrounding communities so that it may contribute to the Army installations' progress toward sustainable management. The Army has invited the EPA to join in every aspect of the Net Zero effort and seeks its help in selecting strategies, employing tools, investing in new technologies and processes, and engaging stakeholders. With this in mind, a recent MOU was signed by Army and EPA's ORD. More can be found on the program at this website: <http://army-energy.hqda.pentagon.mil/netzero/>

For more information on the Army Net Zero Installation Initiative, please contact:

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(For complete story, go to page 6 of the newsletter ->

http://www.ndcee.ctc.com/newsletters/Fall_2011_newsletter.pdf)

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<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

LOCAL NEWS

Superfund Research Program: Ramirez-Andreotta Receives Wetterhahn Award



Monica Ramirez-Andreotta was named the 14th recipient of the Karen Wetterhahn Memorial Award at the SRP Annual Meeting. Monica is seen here with SRP Director Bill Suk.

In her acceptance presentation, Monica shared her unique research program "Gardenroots," a citizen science program that uses samples collected from local farmers to evaluate metal uptake in vegetables grown in

soil adjacent to the Iron King Mine Humboldt Smelter Superfund site. As a prize for winning, Monica will receive support to attend a conference of her choice as well as an invitation to present at NIEHS. Congratulations, Monica!

For more on the project, click here -> <http://garden-roots.org/>

DATEBOOK - UPCOMING EVENTS

This section of the newsletter is an attempt to present both EPA and non-EPA sponsored environmental technology related courses and conferences. But being a quarterly publication, it is impossible for this newsletter to always be up-to-date. For the most pertinent information on upcoming EPA courses, see <http://www.trainex.org>. These events are listed chronologically.

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<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

(NOTE: Some multi-line URLs may need to be cut and pasted. Sorry for the difficulty.)

Many of the entries in these newsletters are from TIO's "TechDirect" emails (thank you Jeff Heimerman!). TechDirect is also tied to the clu-in webpage, which lists many training opportunities, including the following:

Announcement of Courses: <http://clu-in.org/courses>
Archive of Courses: <http://clu-in.org/live/archive.cfm>
Internet Training <http://www.cluin.org/training>

ITRC Internet Based Training

These are typically 1-2 hour online courses where the participant follows a webpage presentation, while listening on the phone. Check - <http://www.itrcweb.org> or <http://www.clu-in.org/studio/seminar.cfm> to verify times and registration, unless other websites are mentioned below. (Note that times are Eastern time.)

January 30 - Innovative Technologies Used to Quantify Environmental Contaminant Bioavailability and Characterize Environmental Exposure

February 14 - Green and Sustainable Remediation

February 16 - Use and Measurement of Mass Flux and Mass Discharge

February 23 - Decision Framework for Applying Attenuation Processes to Metals and Radionuclides

February 28 - Phytotechnologies

March 6 - US and EU Perspectives on Green and Sustainable Remediation, Part 4

ITRC Training - Light Nonaqueous-Phase Liquids: Science, Management, and Technology

2-day training class at 3 locations across the country

Additional details: <http://www.itrcweb.org/crt.asp>

American Ground Water Trust and Association of Ground Water Agencies Annual Conference - AQUIFER RECHARGE - WATER RESOURCES ISSUES

January 30-31, 2012

Ontario, California

http://www.agwt.org/events/2012/2012_CA_WM_Program1.pdf

Compounds of Emerging Concern in Groundwater Symposium

February 7 - 8, 2012

Concord, California

<http://www.grac.org/emergingcompounds.asp>

Sampling for Hazardous Materials

February 28 – March 1, 2012

U.S. Coast Guard, Novato, CA

(EPA only - Register on START database)

GROUNDWATER RESOURCES ASSOCIATION of California

Introduction to Groundwater and Watershed Hydrology:

Monitoring, Assessment and Protection

February 28-29, 2012

Davis, CA

<http://www.grac.org/hydrologyreg>

8 Hr. Health & Safety Refresher

March 5-8, 2012

EPA Richmond Lab, Richmond, CA

(EPA only - Register on START database)

The 27th International Conference on Solid Waste Technology and Management

March 11 - 14, 2012

Philadelphia, PA

<http://www.is4ie.org/events?eventId=332162&EventViewMode=EventDetails>

Society of Toxicology (SOT) Annual Meeting

March 11-15, 2012

San Francisco, CA

<http://www.toxicology.org/AI/MEET/AM2012/>

22nd Annual International Conference on Soil, Water, Energy, and Air

March 19-22, 2012

San Diego, CA

<http://www.aehsfoundation.org/west-coast-conference.aspx>

Air Monitoring for Emergency Response

March 20-21, 2012

EPA Richmond Lab, Richmond, CA

(EPA only - Register on START database)

DoD Environmental Monitoring & Data Quality (EMDQ) Workshop

March 26-29, 2011

La Jolla, CA

<http://www.regonline.com/builder/site/Default.aspx?EventID=1014424>

US EPA's 2012 National Hardrock Mining Conference

April 3-5, 2012

Denver, CO

<http://www.epa.gov/nrmrl/events/event04032012.html>

Seventh Annual Conference on Design and Construction Issues at Hazardous Waste Sites

April 10-12, 2012

Philadelphia, PA

https://superfund.usace.army.mil/superfund_production/dchws/Home.aspx

ITRC Spring Meeting

April 16-20, 2012

Des Moines, IA

<http://itrcweb.org/conferences.asp>

National Water-Quality Monitoring Conference

April 30 - May 4, 2012

Portland, OR

<http://acwi.gov/monitoring/conference/2012/index.html>

EPA Tech Support Project Meeting

Oklahoma, City, OK

May 1-3, 2012

<http://www.epa.gov/tio/tsp/meetings.htm>

(Or contact Linda Fiedler at 703-603-7194)

Overview of Environmental Physics

May 11, 2012

EPA Richmond Lab, Richmond, CA

(EPA only - Register on START database)

E2S2 Conference

May 21-24, 2012

New Orleans, LA

<http://e2s2.ndia.org/Pages/Default.aspx>

Battelle Conference: Remediation of Chlorinated and Recalcitrant Compounds

May 21-24, 2012

Monterey, CA

<http://www.battelle.org/Conferences/chlorinated/index.aspx>

8 Hr. Health & Safety Refresher

June 4-7, 2012

EPA Region 9, San Francisco, CA

(EPA only - Register on START database)

Chemistry for Environmental Professionals

September 25-28, 2012

EPA Region 9, San Francisco, CA

(EPA only - Register on START database)

28th Annual International Conference on Soils, Sediments, Water, and Energy

October 15-18, 2012

University of Massachusetts, Amherst, MA

<http://www.umasssoils.com/>

NARPM 2012

Week of October 22, 2012

Location TBD

<http://www.epanarpm.org>

American Public Health Association - 2012 Annual Meeting

October 27-31, 2012

San Francisco, CA

<http://www.apha.org/meetings/AnnualMeeting/>

Dry Cleaners Symposium

November 2012

Sunny California

Confirm with Brian Lewis, (510) 540-3950

WEB PAGES

[Latest Update on Pharmaceutical and Personal Care Products Citations Database](#)

(Courtesy of Dr. Christian Daughton, US EPA Las Vegas Lab)

The latest update has been completed for the US EPA's web page that houses the comprehensive listings of bibliographic citations relevant to all aspects of PPCPs as environmental contaminants (<http://www.epa.gov/ppcp/lit.html>). The complete database now contains citations for 12,976 references. In part, these comprise 9,448 journal articles, 918 reports, 732 books/chapters, 313 theses, 329 web sites/pages, 145 government documents (not including reports), and 110 databases. Over the last year, this represents an increase of about 17% in the number of publications, indicating that the PPCPs field is still in an exponential growth phase. The references cover all facets of the risk paradigm pertinent to PPCPs, including: origins, sources, occurrence, transport, fate, exposure, ecotoxicology, stewardship, pollution prevention, monitoring, waste & water treatment technologies, risk assessment, risk communication, etc., as well as many aspects that are peripherally related (e.g., major citations dealing with low-dose effects, mixture effects, and various databases for medications). The complete electronic database (maintained in EndNote) includes full PDFs of most of the journal articles and reports, and is therefore available only to EPA employees; the size of the EndNote database (5.5GB) further restricts its distribution via solid-state drives. One of the main aspects of the overall topic of PPCPs in the environment that continually attracts broad interest is that of drug disposal and environmental stewardship. Because of this interest, the subset of references that pertain to the many aspects of this specific aspect are compiled in a separate listing: the Drug Disposal and Stewardship (DDS) bibliographic database; this group of references comprises nearly 13% of the references from the main database.

More information is available here: <http://www.epa.gov/ppcp/pdf/Synopsis-of-PPCPs.pdf>. The contact for the bibliographic database is Christian Daughton, NERL-Las Vegas. He can be reached at daughton.christian@epa.gov.

Zero Valent Iron Injection Tool

(Courtesy of NAVFAC)



Zero Valent Iron Injection Tool

Zero valent iron (ZVI) is a strong reducing agent. It has been used successfully in numerous in situ applications to address chlorinated organic, metal, and explosive compounds (including perchlorate) in contaminated groundwater. ZVI is suited both for injection directly into source zones and for placement along a permeable reactive barrier as a groundwater containment remedy. This training tool focuses on ZVI injection for treating chlorinated solvents. ZVI can be injected in a variety of sizes, media, and methods. Alternative injection sizes include micron or nanoscale ZVI (nZVI). Alternative media include ZVI contained in an emulsified oil (EZVI) or with other iron-carbon combinations to stimulate anaerobic biodegradation. Alternative injection technologies include pressurized nitrogen gas or water as carrying fluids to help the iron powders disperse into the subsurface. ZVI technology has grown and progressed in terms of its use, regulatory acceptance, application methods, and reactive media options. This Web tool is designed to assist Navy remedial project managers in the development and implementation of effective ZVI injection applications. The site uses graphic illustrations to demonstrate the use and behavior of ZVI in the subsurface. Users can: learn about the scientific concepts related to the use of ZVI and the types of ZVI media available for injection, understand the different injection methods used to deliver ZVI to the subsurface, understand which factors influence the applicability of the ZVI technologies, and benefit from the lessons learned during ZVI use at other sites.

View and use at <http://www.ert2.org/ZVIT.aspx#tool=zvit&page=Introduction1> .

DCE/VC Stall Tool

(Courtesy of NAVFAC)



The ability of microorganisms to transform chlorinated solvents to innocuous end products enabled the development of in situ bioremediation as a remedial strategy; however, complete dechlorination of perchloroethene (PCE) and trichloroethene (TCE) to innocuous end products (e.g., ethene and ethane) is not always observed. When the reductive dechlorination process is incomplete, levels of dichloroethene (DCE) and/or vinyl chloride (VC) can build up over time in groundwater. This process is referred to as DCE/VC stall, and it can limit the ability of a bioremediation approach to meet cleanup goals and obtain site closure. The purpose of this training tool is to provide remedial

STL Newsletter Archives:
<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

project managers with the information necessary to recognize DCE and/or VC stall. A video graphic can be played that explains reductive dechlorination of PCE and TCE to DCE, VC, and ethene. This tool also explores the biological and/or environmental causes of DCE/VC stall, along with potential solutions. Reductive dechlorination of PCE and TCE to DCE appears at most sites where the redox potential in the aquifer is sufficiently reducing (e.g., iron to sulfate reduction), but at some sites, conditions for complete reductive dechlorination of PCE or TCE to ethene are not present, and degradation stalls at DCE and/or VC. Three basic requirements must be met to form a complete reductive dechlorination pathway: sufficient electron donor (a fermentable carbon source), appropriate redox potential (strongly reducing conditions) in the aquifer, and microbial communities capable of complete dechlorination of PCE to ethene.

View and use at <http://www.ert2.org/DCE/tool.aspx> .

Updated CLU-IN In Situ Oxidation Focus Area

(Courtesy of EPA's OSRTI)



In situ chemical oxidation, also referred to as ISCO, is an aggressive remediation technology that has been applied to a wide range of volatile and semivolatile hazardous contaminants, including DNAPL source zones and the dissolved-phase chemicals emanating from the source zones. The 2010 Superfund Remedy Report (Thirteenth Edition) reports that ISCO was selected as a remedy at 36 Superfund sites during the period 2005 to 2008. Chemical oxidation typically involves reduction/oxidation (redox) reactions that chemically convert hazardous compounds to nonhazardous or less toxic compounds that are more stable, less mobile, or inert. Redox reactions involve the transfer of electrons from one compound to another. Specifically, one reactant is oxidized (loses electrons) and one is reduced (gains electrons). The oxidizing agents most commonly used for treatment of hazardous contaminants in soil and groundwater are hydrogen peroxide, catalyzed hydrogen peroxide, potassium permanganate, sodium permanganate, sodium persulfate, and ozone. Each oxidant has advantages and limitations, and while applicable to soil contamination and some source zone contamination, they have been applied primarily toward remediating groundwater.

View and use at <http://clu-in.org/isco> .

[New Triad Profiles Available on the Triad Resource Center Website](#)



New Triad profiles have recently been added to the User Experiences section of the website. These profiles are concise summaries of successful Triad projects and are backed by a database that can be searched using various criteria such as contaminant, remedial phase, and technology category. Triad is an innovative approach to data collection and decision-making for hazardous waste site characterization and remediation, and the U.S. EPA's Triad Resource Center Website (<http://www.triadcentral.org/>) is a central location for information about the Triad Approach. The website also offers a wide range of information about the use of the Triad including access to the Triad Community of Practice (CoP), Triad technical resources and guidance, and user experiences on the use of Triad at federal and private sites. For additional information or to add a Triad profile, contact Cheryl Johnson at Johnson.Cheryl@epa.gov.

View and use at <http://www.triadcentral.org/user/profile/> .

[EPA, DOE Partner to Develop Renewable Energy on Potentially Contaminated Sites](#)

The U.S. EPA and the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) are evaluating the feasibility of developing renewable energy production on Superfund, Brownfields, and former landfill or mining sites. As part of the RE-Powering America's Land Initiative, EPA is investing approximately \$1 million for projects across the United States aiming to revitalize abandoned sites while protecting people's health, the environment and providing economic benefits to local communities, including job creation. Projects will analyze the potential development of wind, solar, biomass, or geothermal production at 26 sites.

More information and site fact sheets are available at <http://www.epa.gov/renewableenergyland/studies.htm> .

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 are some resources included in the last couple of issues:

- SERDP and ESTCP Workshop on Investment Strategies to Optimize Research and Demonstration Impacts in Support of DOD Restoration Goals
- Field Demonstration of Biologically Active Zone Enhancement (BAZE) for In Situ RDX Degradation in Groundwater: ESTCP Cost and Performance Report
- Field Demonstration of a Novel Biotreatment Process for Perchlorate Reduction in Groundwater: ESTCP Cost and Performance Report
- Field Portable GC-MS Unit For Semi-Volatile Compound Analysis In Groundwater: ESTCP Cost & Performance Report
- Practical Cost-Optimization of Characterization and Remediation Decisions at DNAPL Sites with Consideration of Prediction Uncertainty
- Contaminant Mass Transfer During Boiling in Fractured Geologic Media
- Innovative In-Situ Remediation of Contaminated Sediments for Simultaneous Control of Contamination and Erosion: Part I & Part II
- Decision Guide: A Guide for Selecting Remedies for Subsurface Releases of Chlorinated Solvents
- Decision & Management Tools for DNAPL Sites: Optimization of Chlorinated Solvent Source and Plume Remediation Considering Uncertainty: ESTCP Cost and Performance Report
- Vapor Intrusion Mitigation Advisory, Revision 1
- Opportunities for Petroleum Brownfields
- Sustainability and the U.S. EPA
- Review of Available Technologies for the Removal of Selenium from Water

RECENT DOCUMENTS, DATABASES, ETC.

These entries are arranged alphabetically. Thanks to TechDirect, Tech Trends, NRMRL News, the ETV Program, DOE, DoD and others for posting their latest documents. And remember, many of these are available in paper format in the Region 9 library. If you have access to the EPA libraries, please use them! Some items require that you have an account for access.

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STL Newsletter Archives:
<http://www.epa.gov/osp/hstl/hstlnewsletter.html>

Thanks for reading it! Comments and suggestions are appreciated. If you wish to be added to or deleted from this list, please send me an email. (gill.michael@epa.gov)

Newsletter archives can be found on the EPA intranet site.....

<http://www.epa.gov/osp/hstl/hstlnewsletter.htm>

A number of environmental technology web resources can be found here.....

<http://www.epa.gov/region9/waste/techlinks/>

And don't forget the "STL" website.....

<http://www.epa.gov/osp/hstl.htm>

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