

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

Winter 2008, Edition 42

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Happy New Year to everyone! 2008 is here and the challenges of cleaning up sites continue into the new year. Often these days, we hear that the easy hazardous waste sites have been dealt with, but the hard ones still remain. These are obviously our biggest challenges! My intent with this newsletter is to help provide you with new information to help meet these challenges. Each quarter, I attempt to gather the latest hazardous waste site information (documents, training, case studies and conference results) and provide it to you in one place. This quarter, you can read about EPA's efforts in green remediation and some new ETV technology verifications, as well as new guidance documents and valuable information heard at this past fall's Tech Support Project Meeting. I hope you find the information useful.

I also want to remind you of the regional tech support and the ORD tech support that is offered to EPA RPMs and RCRA project managers. We do our best to keep this support available, but lately have some of our own challenges. Maintaining the remote sensing support from EPIC is one of those recent challenges - see more on that below. We're all working to keep it a viable resource, as some question its value. Don't let that prevent you from picking up the phone. Please call me if you need tech support. And again, happy new year...and go Pats! (It is SuperfundBowl season, is it not?)

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ORD Superfund and Technology Liaison  
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## Winter 2008 Edition of the Region 9 STL Newsletter:

### National News

- New Tools and Technologies
  - Successful Technologies for Arsenic Removal From Drinking Water
  - ETV Verifications
  - Mapping Dissemination of Chemicals after Dispersive Events Using.....Mass Spectrometer
- Environmental Photographic Interpretation Center (EPIC) - Potential Long-Term Changes
- Summary of Technical Support Project Meeting, Las Vegas, NV (November 5-8, 2007)

**Local News**

- Green Remediation - EPA Efforts

**Datebook - Upcoming Events**

**Web Pages**

- Navy Environmental Interactive Web Tools
- Crozet Phytoremediation
- Ecological Restoration of Lands
- New CLU-IN Field Analytic Technologies Section on Membrane Interface Probes
- European Union Soil Portal
- CLU-IN Site Tour
- REMChlor Model Now Available
- Underground Storage Tank State Delivery Prohibition Programs

**Recent Documents, Databases, etc.**

**Serious Scientists Gather 'Round...**

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# NATIONAL NEWS

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**New Tools and Technologies**

**Successful Technologies for Arsenic Removal From Drinking Water**

(From NRMRL News, January, 2008)

When the federal rule limiting arsenic in drinking water was revised in 2001 to 10 parts per billion, it challenged nearly all small U.S. water systems (those serving 10,000 or fewer people) to find cost-effective ways to meet the new standards. Recognizing the potential economic and technical burdens of compliance, EPA proposed a number of assistance programs. One of these is the Arsenic Removal Technology Demonstration Program, initiated in 2002 to provide cost-effective technologies, training, and technical assistance for small systems. Directed by National Risk Management Research Laboratory (NRMRL) drinking water scientists, the first round of the demonstration program matched 12 small utilities with the best-fit arsenic removal technologies in order to gather performance and cost data that could be shared with other U.S. communities. Round 2 of the program identified 28 additional sites and Round 2a another 10 sites, bringing the total to 50. All 50 systems are expected to be installed and operating by summer of 2008.



## Background

Arsenic is a human carcinogen. Chronic exposure to low levels of arsenic has been linked to skin, kidney, lung, and bladder cancers, as well as adverse neurological and cardiovascular effects. The erosion of natural deposits of arsenic, common to many areas of the U.S., is a potential source of ground water contamination, and thus, of local drinking water. Other exposure sources are pesticide runoff from orchards, and industrial wastes from glass and electronics production. By the 1990s, the development of increasingly sophisticated detection tools highlighted the risks of arsenic in drinking water and prompted the federal reduction of arsenic standards from the initial 50 parts per billion to a safer 10 parts per billion, which became effective by 2006.

For most small drinking water systems, installing new treatment technologies depends on a variety of factors: the quality of source water, the ease of integration into existing systems, the management of treatment wastes, and costs. EPA's Arsenic Removal Technology Demonstration Program worked with selected small systems (chosen through a competitive voluntary process) to identify the best arsenic removal technology for each community from a variety of commercially available products. Technologies were offered free of charge during the demonstration and, if successful, were available to communities at no cost upon completion of the study. Local systems paid for any new construction required for housing the equipment and for the waste disposal process, plus personnel and operating costs.

## In the Town of Climax

Some of the most successful studies were conducted in communities with source water rich in iron because of the strong affinity of natural iron surfaces for adsorbing arsenic. An example is the agricultural community of Climax, Minnesota, about 300 miles northeast of Minneapolis, population 270. The iron-based technology selected by the Climax water system involved a three-step process of oxidation, precipitation/coagulation, and filtration. The demonstration results were dramatic: from a previous level of 36-38 parts per billion, arsenic levels dropped to 4-6 parts per billion in treated water, putting the Climax utility well within the mandated federal limits. Furthermore, the technology equipment occupied minimal physical space, was affordable, and required little maintenance. The arsenic treatment had the added benefit of reducing the naturally occurring iron in the water; from a previous level of 500-850 parts per billion down to 25-30, resulting in reports from some homeowners of increased water flows at the faucet. Following the demonstration period, the community elected to keep the technology permanently.

Because of the variability of source water across the U.S. and differences in small systems operations, there is no "one-size-fits-all" technology for arsenic removal. However, NRMRL researchers to date have published the results of more than 25 technology demonstrations that are providing important arsenic removal information to small systems managers, state and local governments, and technology vendors nationwide.

Contact:

Patricia Schultz, NRMRL Office of Public Affairs (513) 569-7966

See Also:

Arsenic Treatment Technologies (<http://www.epa.gov/nrmrl/wswrd/dw/arsenic/tech/index.html>)

Arsenic in Drinking Water (<http://www.epa.gov/safewater/arsenic/index.html>)

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Mapping Dissemination of Chemicals after Dispersive Events Using an Ambient-Air, Surface Sampling Time-of-Flight Mass Spectrometer

(Edited from ORD poster by Andrew Grange and Wayne Sovocool, Las Vegas Lab)

Chemicals are dispersed by numerous accidental, deliberate, or weather-related events. Often, rapid analyses are desired to identify dispersed chemicals and to delineate areas of contamination. Hundreds of wipe samples might be collected from outdoor surfaces or building interiors both before and after any remediation. A hypothetical distribution map for a chemical might comprise a 25 x 40 grid, and require 1000 wipe samples after a dispersive event.

Research was conducted by EPA at the ORD Lab in Las Vegas to meet two goals.

Goal 1: Use the simplest and most rugged ambient-air, surface sampling, mass spectrometer capable of measuring exact masses of ions formed from dispersive agents, chemical warfare agents, pesticides, and any other disseminated chemicals. This need is met with the commercially available "Direct Analysis in Real Time" (DART) / orthogonal acceleration, time-of-flight mass spectrometer (oa-TOFMS). The objective is to rapidly identify and semi-quantitate levels of chemicals on cotton swab wipe samples collected at a dispersive site using this instrument.

Goal 2: Develop hardware and software that enables one analyst in one shift to receive and process 1000 samples as they would arrive from the field to produce distribution maps of dispersed chemicals.

Research to meet these goals has been successful in some areas, and not in others, so work continues. In addition to Homeland Security applications, this pending technology would also make feasible better and more rapid mapping of pollutants found in Superfund sites. Treating Superfund sites as simulated dispersion sites could provide realistic training for operators while providing Regions with better characterization of their sites before and after remediation. This technology could also be used to delineate the extent of contamination in clandestine methamphetamine or other illicit drug labs and to document successful remediation efforts.

For more information on the research results, please contact the researchers:

Andrew Grange      [grange.andrew@epa.gov](mailto:grange.andrew@epa.gov)

Wayne Sovocool      [sovocool.wayne@epa.gov](mailto:sovocool.wayne@epa.gov)

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**ETV VERIFICATIONS**



ETV has completed verification testing and reports for 399 innovative environmental technologies! For a full list of ETV verifications, visit: <http://www.epa.gov/etv/verifiedtechnologies.html>. Here are some of the latest verifications published.

**MULTI-PARAMETER WATER SENSOR VERIFIED**

<http://www.epa.gov/etv/pubs/600etv07051.pdf>

Baghouse Filtration Products, Donaldson Company, Inc., 6282 Filtration Media

<http://www.epa.gov/etv/pubs/600etv07022.pdf>

Baghouse Filtration Products, Donaldson Company, Inc., 6277 Filtration Media

<http://www.epa.gov/etv/pubs/600etv07014.pdf>

Baghouse Filtration Products, Southern Filter Media, LLC, PE-16/M-SPES Filter Sample

<http://www.epa.gov/etv/pubs/600r07029.pdf>

**BALLAST WATER EXCHANGE SCREENING TOOL VERIFIED**

<http://www.epa.gov/etv/vt-ams.html#bwest>

**COMBINED HEAT AND POWER SYSTEMS VERIFIED**

<http://www.epa.gov/etv/vt-ggt.html#advanceenergy>

**IN-DRAIN TREATMENT TECHNOLOGY VERIFIED**

<http://www.epa.gov/etv/vt-wqp.html#idtt>

Mobile Source Emission Control Devices, Cummins Emission Solutions and Cummins Filtration, Diesel Oxidation Catalyst and Closed Crankcase Ventilation System

<http://www.epa.gov/etv/pubs/600etv07027.pdf>

**STORM WATER SOURCE-AREA TREATMENT DEVICES VERIFIED**

<http://www.epa.gov/etv/vt-wqp.html#SWSATD>

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Environmental Photographic Interpretation Center (EPIC) - Potential Long-Term Changes

Last quarter, I reported that one of our Tech Support Centers, the Site Characterization and Monitoring Center out of Las Vegas, was undergoing a management change. While this change is likely to be transparent to many users and is working smoothly so far, this quarter's resource news is not so good. At press time, another valuable resource to Superfund and other programs, EPIC - the Environmental Photographic Interpretation Center - was not in operation due to contract management issues. EPIC is where we get remote sensing support, such as historic aerial photos and new flyovers for site assessment. They maintain a library containing decades of unique historical aerial photos. These photos, along with new flyover photos, assist project managers and site assessment staff by providing a visual history of waste sites. Nationally, EPIC provides these services to well over 200 requestors annually. Please continue to submit your requests to your contact (me for Region 9), but understand that this is the present situation. Hopefully, it will be resolved soon.

Here is more info on the service: <http://www.epa.gov/esd/land-sci/epic/aboutepic.htm>

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Summary of Technical Support Project Meeting, Las Vegas, NV (November 5-8, 2007)



The 3 Superfund Forums (Ground Water, Engineering and Federal Facilities) met in early November at the ORD lab in Las Vegas for their semi-annual meeting. During a plenary session, we heard from a number of local ORD scientists about topics they've been researching. Also during this session, each Forum provided updates on their individual activities regarding issue papers, training and other projects. Each Forum also conducted separate business sessions. Three Forum members were recognized during this meeting for their efforts. They included Region 9's Rich Muza (FFF), Hilary Thornton of Region 3 (EF) and Marcia Knadle of Region 10 (GWF). Congrats to all! The group also took part in a field trip to two perchlorate spill sites in the Las Vegas wash area on the last day of the meeting, where they heard about a large in-situ bioremediation system at the AMPAC site. If you are interested in joining one of the Forums, please talk to your regional rep. A list of the reps can be found on the TSP webpage: <http://www.epa.gov/tio/tsp/index.htm> .

For a highlights document prepared after the meeting, please see the TSP website: [http://www.epa.gov/tio/tsp/download/2007\\_fall\\_meeting/fall\\_2007\\_highlights.pdf](http://www.epa.gov/tio/tsp/download/2007_fall_meeting/fall_2007_highlights.pdf).

Highlights of the meeting included:

ORD NERL Presentations:

- Geophysics to Monitor Remediation (Dale Werkema)
- Vacuum Distillation: An EPA Method that Expands the Number of Volatiles that Can Be Analyzed, Especially in Difficult Matrices (Mike Hiatt)
- Thermal Multispectral Detection of Industrial Chemicals (David Williams)
- GIS and Logistics Regression for Predicting Nutrients and Pesticides in Streams (Ann Pitchford)

The **Ground Water Forum** celebrated its 20th year in 2007. Congrats to them! They offered talks on Mass Flux and Technical Impracticability (TI) during the week and announced their issue paper efforts for the past year. Among many were these papers: *A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems*; *Understanding the Uncertainties Associated with Ground-Water Cleanup Timeframe Calculations*; and *Assessment and Delineation of DNAPL at Hazardous Waste Sites*.

The **Federal Facilities Forum**, who organized this meeting, brought in John Reeder and Norm Niedergang from headquarters to speak to the Forums. One of the many projects currently being worked on by the FF Forum is both an issue paper and a three-day training course focusing on methods for investigating explosives-contaminated ranges.

This year, the **Engineering Forum** got close (almost!) to releasing a handful of issue papers, including ones titled *Ex-Situ Treatment of Oxygenated Hydrocarbons and Perchlorate in Ground Water* and *Technology Alternatives For The Remediation of Soil and Sediment Contaminated With PCBs*, as well as ones covering vapor intrusion mitigation approaches and evapotranspiration covers. Be looking for those early this year. During this meeting, they announced their intention to work on "green remediation" issues, including offering a session at this year's 2008 NARPM meeting (that's the one mentioned in the next section of the newsletter).

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# LOCAL NEWS

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## Green Remediation - EPA Efforts



One of the exciting new areas that EPA is getting involved in is the area of "Green Remediation". As OSWER defines it, green remediation is "...the practice of considering environmental impacts of remediation activities at every stage of the remedial process in order to maximize the net environmental benefit of a cleanup.

Considerations include selection of a remedy, energy requirements, efficiency of on-site activities, and reduction of impacts on surrounding areas". Back in the summer of '07, an OSWER intern put together a document titled: "Green Remediation and the Use of Renewable Energy Sources for Remediation Projects" (where this definition comes from) and it provided a good background and survey of Superfund sites where green remediation is being considered. The OSWER paper can be found at this site:

<http://www.clu-in.org/download/studentpapers/Green-Remediation-Renewables-A-Dellens.pdf> .

One important part of green remediation is energy use and Region 9 EPA has been doing quite a bit in this area. It could be argued that this topic is really national in scope and shouldn't be under the "Local News" section, but so much has been done here in Region 9 that I wanted to recognize them. Most recently, work has been progressing on a "*Smart Energy Resource Guide*" (with most of the effort from our intern Jennifer Wang) or "SERG". This document, presently under peer review, will assist project managers with information needed to generate power at their cleanup sites through renewable energy means and to reduce diesel emissions. Look for its release later this calendar year. And this is only one part of the region's exciting "Cleanup-Clean Air" initiative. More on that can be found at this webpage:

<http://www.epa.gov/region09/cleanup-clean-air/index.html> .



**CLEANUP - CLEAN AIR**  
**DIESEL EMISSIONS & GREENHOUSE GAS REDUCTIONS**

Back to Green Remediation. The topic has grown in interest in many respects and there is even a session for this summer's NARPM conference being planned on green remediation. Many of us remember a session on energy use at Superfund sites at last year's NARPM. Energy is really just one segment of the whole sustainability equation at our cleanup sites. The agenda for this new NARPM session is shaping up to include some case studies, as well as presentations on what we should and should not measure to ensure that we are conducting the most "green" remediation. In other words, what are the criteria to measure a green remedial activity? What are the metrics? Should we try and reduce diesel emissions from earth moving equipment at a soil removal site? Certainly! Should we make sure that the truck was manufactured in a "sustainable manner"? Some would say that's going too far, but that's actually part of the present debate. Is less activity (like MNA) always more green than an active remedy (like pump and treat)? Not always! It should be an interesting session as we learn more about this new aspect of cleanup.

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## **DATEBOOK - UPCOMING EVENTS**

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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.

Many of the entries in these newsletters are from TIO's "TechDirect" emails (thank you Jeff Heimerman!). TechDirect prefers to concentrate mainly on new documents and the internet live events. However, they do support an area on the CLU-IN webpage where announcement of conferences and courses can be regularly posted. Sponsors can input information on their events at <http://clu-in.org/courses>. Likewise, the page has an area for upcoming events that might be of interest. It allows users to search events by location, topic, time period, etc.

Many of you know that [www.clu-in.org](http://www.clu-in.org) routinely place seminars in the CLU-IN Studio archive after they have aired. This provides access to the slides and the audio file for each presentation. For more recent seminars, you can also download them in MP3 format which will allow you to listen via portable music players. You may also subscribe to their podcast feed, which will alert you when new seminar archives are available. For more information, see <http://clu-in.org/live/archive.cfm>.

CLU-IN Training Area. A training section has been posted to CLU-IN. The Training page offers visitors a quick glimpse of upcoming training opportunities in a monthly view as well as a running list of events. Links to upcoming Conference Webcasts, Trainex and Archived Internet Seminars and Podcasts are available on the Training Page. See: <http://www.cluin.org/training>.

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## **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.

January 29 - *Risk Assessment and Risk Management: Determination and Application of Risk-Based Values*  
2:00 p.m. - 4:15 p.m. EASTERN Time

February 19 - *Vapor Intrusion Pathway: A Practical Guideline*  
2:00 p.m. - 4:15 p.m. EASTERN Time

February 21 - *Protocol for Use of Five Passive Samplers*  
11:00 a.m. - 1:15 p.m. EASTERN Time

February 26 - *Performance-based Environmental Management*  
2:00 p.m. - 4:15 p.m. EASTERN Time

March 13 - *Real-Time Measurement of Radionuclides in Soil*  
11:00 a.m. - 1:15 p.m. EASTERN Time

March 18 - *Evaluating, Optimizing, or Ending Post-Closure Care at Municipal Solid Waste Landfills*  
2:00 p.m. - 4:15 p.m. EASTERN Time

April 8 - *Decontamination and Decommissioning of Radionuclide Sites*  
2:00 p.m. - 4:15 p.m. EASTERN Time

April 17 - *Risk Assessment and Risk Management: Determination and Application of Risk-Based Values*  
11:00 a.m. - 1:15 p.m. EASTERN Time

April 24 - *Protocol for Use of Five Passive Samplers*  
11:00 a.m. - 1:15 p.m. EASTERN Time

April 29 - *Vapor Intrusion Pathway: A Practical Guideline*  
2:00 p.m. - 4:15 p.m. EASTERN Time

May 15 - *Planning and Promoting Ecological Land Reuse of Remediated Sites*  
11:00 a.m. - 1:15 p.m. EASTERN Time

**The 11th Annual Energy and Environment Conference (EUEC) on  
Air Quality, Mercury, Climate Change, and Renewable Energy**

January 27-30, 2008

Tucson, AZ

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

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**EPA Region 9 SFD Special Accounts Class**

Jan 29-30, 2008

Register: email Lisa Ouyang

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**Chemistry for Environmental Professionals**

Jan 29 – Feb 1, 2008

Millbrae, CA

Register: <http://www.trainex.org>

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**Symposium on Emerging Chemicals in Soil and Groundwater: Detection, Analysis and  
Remediation**

January 31 - February 1, 2008

Tampa, FL

[http://www.astm.org/cgi-  
bin/SoftCart.exe/COMMIT/COMMITTEE/D18.htm?L+mystore+lbgm3758](http://www.astm.org/cgi-bin/SoftCart.exe/COMMIT/COMMITTEE/D18.htm?L+mystore+lbgm3758)

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**2008 Environmental Industry Summit VI**

February 20-22, 2008

San Diego, CA

<http://events.zweigwhite.com/eisummit/>

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**Site Closure Strategies**

February 20-21, 2008

Hilton Hotel, Concord, CA

<http://www.grac.org/closurereg.htm>

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**3rd Annual Greener Nanoscience Conference & Program Review**

March 10-11, 2008

Corvallis, OR

<http://oregonstate.edu/conferences/greenermano2008/>

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**18th Annual AEHS Meeting & West Coast Conference on  
Soils, Sediments, and Water**

March 10-13, 2008

San Diego, CA

<http://www.aehs.com/conferences/westcoast/program.htm>

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**National Corrective Action Conference**

March 13, 2008

New Orleans, LA

Contact: Karen Tomimatsu (703) 605-0698

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**2008 AFCEE Technology Transfer Workshop**

March 25-28, 2008

San Antonio, TX

<http://www.afcee.brooks.af.mil/products/techtrans/workshop/> .

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**EPA Region 9 Health & Safety 8-Hour Refresher**

March 17-20, 2008

Richmond Lab (CA)

Register on Region 9 START database

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**ICSW 2008 - The 23rd International Conference on Solid Waste Technology and Management**

March 30 - April 2, 2008

Philadelphia, PA

<http://www.widener.edu/solid.waste>

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**2008 Conference on Design and Construction Issues at Hazardous Waste Sites**

April 24-25, 2008

Philadelphia, PA

<https://superfund.usace.army.mil/2008DCHWS>

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**Brownfields 2008**

May 5-7, 2008

Detroit, MI

<http://www.brownfields2008.org>

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**Environmental Remediation Technologies**

March 11-13, 2008

Seattle, WA

<http://www.trainex.org/offeringslist.cfm?courseid=2&all=yes>

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**Risk Management Programs - Techniques**

April 23-25, 2008

EPA Region 9, To be determined.

<http://www.trainex.org/offeringslist.cfm?courseid=17&all=yes>

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**Hazardous Materials Incident Response Operations**

May 5-9, 2008

Richmond, CA

<http://www.trainex.org/offeringslist.cfm?courseid=23&all=yes>

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**Introduction to Environmental Geophysics**

May 14, 2008

EPA Region 9, To be determined

<http://www.trainex.org/offeringslist.cfm?courseid=28&all=yes>

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**MODFLOW and More: Groundwater and Public Policy**

May 19-21, 2008

Colorado School of Mines, Golden, CO

<http://www.mines.edu/igwmc/events/modflow2008/modflow2008.shtml>

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**Sixth International Conference on  
Remediation of Chlorinated and Recalcitrant Compounds**

May 19-22, 2008

Monterey, CA

<http://www.battelle.org/environment/er/conferences/chlorcon/default.stm>

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**Annual ETV Team Meeting**

May 19-20, 2008

Washington, DC.

For more information, please contact Abby Waits, EPA, at (513) 569-7884 or  
waits.abby@epa.gov.

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**U.S. EPA Science Forum 2008**

**"Innovative Technology: Key to Environmental and Economic Progress"**

May 20-22, 2008

Washington, DC

<http://www.epa.gov/ord/scienceforum/>

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**2008 Life Science Venture Forum**

May 30, 2008

Santa Clara, CA

<http://www.theventureforum.com/index.asp>

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**Triad Investigations: New Approaches and Innovative Strategies**

June 10-13, 2008

Amherst, MA

<http://www.umass.edu/tei/conferences/triad.html>

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**2008 Annual Meeting of American Society of Surface Mining & Reclamation**

June 14-19, 2008

Richmond, VA

[http://www.cses.vt.edu/revegetation/ASMR\\_2008.html](http://www.cses.vt.edu/revegetation/ASMR_2008.html)

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**Air and Waste Management Association 2008 Annual Conference and Exhibition**

June 24-27, 2008

Portland, OR

<http://www.awma.org/ACE2008/>

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**XVII International Conference of Computational Methods in Water Resources (CMWR)**

July 6 - 10, 2008

San Francisco, CA

<http://www-esd.lbl.gov/CMWR08/>

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**24th Annual International Conference on Soils, Sediments and Water Analysis, Site Assessment, Fate, Environmental and Human Risk Assessment, Remediation and Regulation**

October 20-23, 2008

Amherst, MA

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

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**11th Annual Florida Brownfields Conference**

October 26-29, 2008

St. Pete Beach, FL

<http://www.floridabrownfields.org>

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## **W E B P A G E S**

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**[Navy Environmental Interactive Web Tools](#)**

The Naval Facilities Engineering Center's (NAVFAC) homepage contains Environmental Interactive Web Tools. There are a number of short presentations that have good information transfer tools for colleagues and the public: <http://www.ert2.org/ert2portal/DesktopDefault.aspx>

The following website provides a good description of the basic concepts of mass flux measurements.

<http://www.ert2.org/MassFluxDS/tool.aspx>

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### Crozet Phytoremediation

This video highlights an EPA Green Remediation initiative in Crozet, VA.

<http://clu-in.org/studio>

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### Ecological Restoration of Lands

This web site is a resource for project managers and others seeking information and guidance on ecological restoration and revitalization. It includes a glossary of restoration terms and a set of principles for ecological restoration; as well as information and links to resources on soil health and amendments, native and invasive plant species, and ecosystem-based restoration. It also features a comprehensive list of region-by-region and state-by-state federal and local resources for ecological restoration projects, including the Federal Highway Administration's publication, "Roadside Use of Native Plants."

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

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### New CLU-IN Field Analytic Technologies Section on Membrane Interface Probes



A membrane interface probe (MIP) is a semi-quantitative, field-screening device that can detect volatile organic compounds (VOCs) in soil and sediment. It is used in conjunction with a direct push platform (DPP), such as a cone penetrometer testing rig (CPT) or a rig that uses a hydraulic or pneumatic hammer to drive the MIP to the depth of interest to collect samples of vaporized compounds. The probe captures the vapor sample, and a carrier gas transports the sample to the surface for analysis by a variety of field or laboratory analytical methods.

Additional sensors may be added to the probe to facilitate soil logging and identify contaminant concentrations.

The results produced by a MIP at any location are relative and subject to analytic verification. There has been plenty of information compiled by the folks at the clu-in.org website and it can be viewed at:

<http://clu-in.org/char/technologies/mip.cfm> .

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### European Union Soil Portal

The EU Joint Research Centre established the EU Soil Portal to present data and information regarding soils at the European level. It connects to activities within JRC concerning soil (JRC SOIL Action). It serves also as a vehicle to promote the activities of the European Soil Bureau Network. Spatial data collection and processing within this infrastructure is performed according to emerging ideas behind the INSPIRE (Infrastructure for Spatial Information in Europe) initiative. For more information, see: <http://eusoils.jrc.it/index.html> .

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### **CLU-IN Site Tour**

CLU-IN houses the latest detailed information on innovative site characterization, monitoring, and remediation approaches. In fact, CLU-IN has so many resources and services available that it can be hard for new visitors to quickly see all that it has to offer. The CLU-IN Site Tour briefly describes some of the CLU-IN resources that can make your job easier. Take the tour at: <http://clu-in.org/tour/> .

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### **REMChlor Model Now Available**

The EPA Center for Subsurface Modeling Support (CSMoS) provides public domain ground-water and vadose zone modeling software and services to public agencies and private companies throughout the nation. The primary aims of CSMoS are to provide direct technical support to EPA and State decision makers in subsurface model applications and to manage and support the ground-water models and databases resulting from the research at National Risk Management Research Laboratory (NRMRL). This research encompasses the transport and fate of contaminants in the subsurface, the development of methodologies for protection and restoration of ground-water quality, and the evaluation of subsurface remedial technologies. As a result, a major focus of CSMoS entails coordinating the use of models for risk assessment, site characterization, remedial activities, wellhead protection, and Geographic Information Systems (GIS) application. The Remediation Evaluation Model for Chlorinated Solvents (REMChlor) Version 1.0 is now available for download. See: <http://www.epa.gov/ada/csmos.html> .

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### **Underground Storage Tank State Delivery Prohibition Programs**

EPA has designed a page to help petroleum and hazardous substance delivery companies determine whether an underground storage tank (UST) is eligible for product delivery. This page provides links to state and territory laws, regulations, and policies in order to help users determine the applicable requirements in each state and territory. EPA updates this information as states implement new delivery prohibition programs. View at: <http://www.epa.gov/oust/dp/> .

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## **RECENT DOCUMENTS, DATABASES, ETC.**

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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. Use your local library.....or it may disappear. It's happening at EPA.....

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AFCEE Source Zone Strategy

<http://www.afcee.brooks.af.mil/products/techtrans/NAPLSourceZoneTreatment/NAPLReferences.asp>

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Arsenic Removal From Drinking Water by Adsorptive Media, U.S. EPA Demonstration Project at Chateau Estates Mobile Home Park in Springfield, OH, Final Performance Evaluation Report (PDF) (84 pp, 2.21 MB) (EPA/600/R-07/072) August 2007

<http://www.epa.gov/nrmrl/pubs/600r07072/600r07072.pdf>

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A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems

EPA/600/R-08/003

January 2008

<http://www.epa.gov/ada/download/reports/600R08003/600R08003.pdf>

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Atlanta Commute Vehicle Soak and Start Distributions and Engine Parts per Day, Impact on Mobile Source Emission Rates (PDF) (64 pp, 2.09 MB) (EPA/600/R-07/075) April 2007

<http://www.epa.gov/nrmrl/pubs/600r07075/600r07075.pdf>

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Enhanced Phytoremediation of Volatile Environmental Pollutants With Transgenic Trees

<http://www.pnas.org/cgi/content/short/104/43/16816>

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Environmental Screening Assessment of Perchlorate Replacements

(US Army Corps of Engineers document CRREL TR-07-12)

(August 2007, 54 pages)

<http://www.crrel.usace.army.mil/library/technicalreports/TR-07-12.pdf>

"EPA Compares Three Soil-Gas Sampling Systems for Vapor Intrusion Investigations"

DiGiulio, D.C. (2007), Technology News and Trends, 31: 3-4, July.

<http://www.clu-in.org/products/newsletters/tandt/view.cfm?issue=0707.cfm#2>

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#### EUGRIS Corner

New Documents on EUGRIS, the platform for European contaminated soil and water information. New resources, events projects and news items are always being added to EUGRIS.

<http://www.eugris.info/whatsnew.asp>. Recent highlights include:

A Review of Recent Developments in, and the Practical Use of, Ecological Footprinting Methodologies.  
(June 2007, 154 pages)

[http://www.defra.gov.uk/science/project\\_data/DocumentLibrary/EV02024/EV02024\\_5880\\_FRP.pdf](http://www.defra.gov.uk/science/project_data/DocumentLibrary/EV02024/EV02024_5880_FRP.pdf)

Derivation Methods of Soil Screening Values in Europe: A Review and Evaluation of National Procedures towards Harmonisation

(EUR 22805-EN)

(Summer 2007, 320 pages)

[http://www.nicole.org/news/downloads/EUR22805-EN%20\(3\)\\_27\\_AUG.pdf](http://www.nicole.org/news/downloads/EUR22805-EN%20(3)_27_AUG.pdf)

Environmental Technologies Verification Systems

(EUR 22933 EN)

(2007, 112 pages)

<http://ftp.jrc.es/eur22933en.pdf>

Europe's Environment: The Fourth Assessment.

(2007, 452 pages)

[http://reports.eea.europa.eu/state\\_of\\_environment\\_report\\_2007\\_1/en/Belgrade\\_EN\\_all\\_chapters\\_incl\\_cover.pdf](http://reports.eea.europa.eu/state_of_environment_report_2007_1/en/Belgrade_EN_all_chapters_incl_cover.pdf)

Harmoni-CA website

<http://www.harmoni-ca.info/flyers/>

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"Future of Energy"

Glaser, J.A., (2007). Clean Technologies and Environmental Policy, SpringerLink, New York, NY, 9, 3: 157-161, July.

<http://springerlink.com/content/y725507574112k14/>

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Generic Verification Protocol for the Verification of Pesticide Spray Drift Reduction Technologies for Row and Field Crops (PDF) (58 pp, 708 KB) (EPA/600/R-07/102) April 2007

<http://www.epa.gov/etv/pubs/600etv07021.pdf>

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Government UST Compliance Reports

<http://www.epa.gov/oust/fedlaws/sfreport.htm>

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Integrating Water and Waste Programs to Restore Watersheds: A Guide for Federal and State Project Managers  
(October 2007, 197 Pages)

<http://www.epa.gov/superfund/resources/integrating.htm>

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Interim Report on the Evolution and Performance of the Eichrom Technologies Procept Rapid Dioxin Assay for  
Soil and Sediment Samples

(EPA/540/R-07/001)

(January 2007, 45 pages)

<http://www.epa.gov/nerlesd1/cmb/pdf/eichrom-web508.pdf>

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"Mechanistic Relationships Among PCDDs/Fs, PCNs, PAHs, CLPhs, and CLBzs in Municipal Waste  
Incineration."

Oh, J., B.K. Gullett, S.P. Ryan, and A. Toutati. (2007). Environmental Science & Technology, 41, 13: 4705-  
4710. Abstract

<http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2007/41/i13/abs/es0629716.html>

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NATO/CCMS Pilot Study: Prevention and Remediation Issues in Selected Industrial Sectors: Sediments,  
Ljubljana, Slovenia, June 17-22, 2007

(EPA 542-R-07-014)

(August 2007, 56 pages)

[http://clu-in.org/download/partner/nato-ccms\\_august-2007\\_final\\_9-26.pdf](http://clu-in.org/download/partner/nato-ccms_august-2007_final_9-26.pdf)

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Perchlorate Removal, Destruction, and Field Monitoring Demonstration

(ESTCP document CU-0312)

(October 2006, 150 pages)

<http://www.estcp.org/viewfile.cfm?Doc=ER%2D0312%2DFR%2Epdf>

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Protocol for In Situ Bioremediation of Chlorinated Solvents Using Edible Oil

(October 2007, 251 pages)

<http://clu-in.org/download/remed/Final-Edible-Oil-Protocol-October-2007.pdf>

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Regulatory/Compliance Issues at Perchloroethylene Drycleaners

<http://drycleancoalition.org/regtour/>

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RemTech 2007 Proceedings

<http://www.esaa-events.com/remtech>

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Standardized Analytical Methods for Environmental Restoration following Homeland Security Events -  
Revision 3.0

(EPA/600/R-07/015)

(February 2007, 200 pages)

<http://www.epa.gov/nhsrsc/pubs/reportSAM030107.pdf>

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Technical Support Project Highlights

(December 2007, 7 pages)

[http://www.epa.gov/tio/tsp/download/2007\\_fall\\_meeting/fall\\_2007\\_highlights.pdf](http://www.epa.gov/tio/tsp/download/2007_fall_meeting/fall_2007_highlights.pdf)

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Technology News and Trends

(EPA 542-N-06-012)

(November 2007, 6 pages)

<http://clu-in.org/download/newsltrs/tnandt1107.pdf>

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The Use of Soil Amendments for Remediation, Revitalization, and Reuse

(EPA 542-R-07-013)

(December 2007, 59 pages)

<http://clu-in.org/download/remed/epa-542-r-07-013.pdf>

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Xpert Design and Diagnostics' (XDD) In Situ Chemical Oxidation Process Using Potassium Permanganate  
(KMnO<sub>4</sub>) (PDF)

(96 pp, 3.75 MB)

(EPA/540/R-07/005)

<http://www.epa.gov/nrmrl/pubs/540r07005/540r07005.pdf>

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## **Serious Scientists Gather 'Round...**

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What about that paperless office???

**TI: Printer particle emissions add up**

AU:

JN: Environmental Science and Technology

PD: 2007

VO: 41

NO: 17

PG: 5926

PB: ACS AMERICAN CHEMICAL SOCIETY

IS: 0013-936X

PE: SEP 01

URL: <http://www.ingentaconnect.com/content/docdel/art1073985420>

**TI: Particle Emission Characteristics of Office Printers**

AU: He, C; Morawska, L; Taplin, L

JN: Environmental Science and Technology

PD: 2007

VO: 41

NO: 17

PG: 6039-6045

PB: ACS AMERICAN CHEMICAL SOCIETY

IS: 0013-936X

PE: SEP 01

URL: <http://www.ingentaconnect.com/content/docdel/art1073985398>

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Don't forget....we protect human health AND the Environment

**TI: Elevated PBDE Levels in Pet Cats: Sentinels for Humans?**

AU: Dye, JA; Venier, M; Zhu, L; Ward, CR; Hites, RA; Birnbaum, LS

JN: Environmental Science and Technology

PD: 2007

VO: 41

NO: 18

PG: 6350-6356

PB: ACS AMERICAN CHEMICAL SOCIETY

IS: 0013-936X

PE: SEP 15

URL: <http://www.ingentaconnect.com/content/docdel/art1074070018>

Click on the URL to access the article or to link to other issues of the publication.

**TI: Killer Whales (*Orcinus orca*) Face Protracted Health Risks Associated with Lifetime Exposure to PCBs**

AU: Hickie, BE; Ross, PS; Macdonald, RW; Ford, JKB

JN: Environmental Science and Technology

PD: 2007

VO: 41

NO: 18

PG: 6613-6619

PB: ACS AMERICAN CHEMICAL SOCIETY

IS: 0013-936X

PE: SEP 15

URL: <http://www.ingentaconnect.com/content/docdel/art1074069980>

Click on the URL to access the article or to link to other issues of the publication.

**TI: Climate Watch: Are polar bears too polarizing?**

AU:

JN: Environmental Science and Technology

PD: 2007

VO: 41

NO: 22

PG: 7592

PB: ACS AMERICAN CHEMICAL SOCIETY

IS: 0013-936X

PE: NOV 15

URL: <http://www.ingentaconnect.com/content/docdel/art1075096097>

Click on the URL to access the article or to link to other issues of the publication.



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This quarterly newsletter publication is meant to be used for information only. It does not represent the opinion of the management of the regional or national offices of EPA, only that of the author. The accuracy of the information contained herein is not guaranteed, only desired. If corrections are necessary, please contact the author. Thanks again to all of my information resources, which include EPA's OSRTI (formerly TIO), ORD (including ETV and NRMRL News) and Region 1's CEIT.

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/region09/waste/techlinks/>

And don't forget the "STL" website.....<http://www.epa.gov/osp/hstl.htm>

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