

## Message #55: September 2001

Welcome to TechDirect. Since the August 1 message, TechDirect gained 253 new subscribers for a total of 11,567. If you feel the service is valuable, please share TechDirect with your colleagues. Anyone interested in subscribing to TechDirect may do so on CLU-IN at <http://clu-in.org/techdirect> . All previous TechDirect messages are archived there.

Mention of non-EPA documents or presentations does not constitute a U.S. EPA endorsement of their contents, only an acknowledgment that they exist and may be relevant to the TechDirect audience.

### ***Special Announcement***

**The USTfields Initiative: Proposal Guidelines for USTfields Pilots (EPA 510-B-01-001).** EPA will provide \$4 million in financial assistance to clean up contamination from leaking underground storage tanks around the nation. The Agency expects to select up to 40 pilot projects to help states and cities clean up these properties and foster redevelopment by returning them to productive economic and public use. EPA is inviting states, territories and federally-recognized Indian Tribes as well as eligible intertribal consortia to compete for these pilots. Each selected pilot will receive up to \$100,000 in Leaking Underground Storage Tank Trust Fund monies (August 2001, 28 pages). The deadline for submitting proposals for the USTfields Pilots is October 22. View or download the proposal at <http://www.epa.gov/swrust1/ustfield/guidline.pdf> . For hard copies, contact (800) 490-9198 or (513) 489-8190 or fax to (513) 489-8695.

### ***Live Internet Seminars***

**ITRC Advanced Techniques on Installation of Iron Based Permeable Reactive Barriers and Non-Iron Based Barrier Treatment Material - September 11 and 13.** This ITRC seminar uses case studies to describe long-term performance of iron-based systems and details how to design them according to the heterogeneities of the subsurface. New construction techniques for excavation and wall emplacement have improved dramatically and the attention to barrier construction is as critical as is performance monitoring. It also describes non-iron barrier systems, the material most commonly used and the mechanisms encouraging a reduction in contaminant concentrations within the systems. For more

information and to register, see or <http://clu-in.org/studio> Or <http://www.itrcweb.org> .

**Geophysical Characterization Techniques and Data Uses, September 18 and 20.** Learn to identify and understand factors to be considered in scoping, executing, or reviewing projects that involve geophysical instruments and techniques. The two hour seminar starts by describing how the use of systematic planning, dynamic work plans, and field technologies (a.k.a. the Triad) is applied to site cleanup, and how geophysical technologies fit into this smarter approach to cleaning up hazardous waste sites. The course then walks you through the use several of technologies such as resistivity profiling and ground penetrating radar. To register, see <http://clu-in.org/studio> .

**ITRC In Situ Chemical Oxidation, September 25-27.** This seminar presents materials covered in the recently released ITRC In Situ Chemical Oxidation Technical and Regulatory Guidance document. It provides technical and regulatory information to assist site managers in understanding, evaluating and making informed decisions on ISCO proposals. It includes descriptions of the various chemical oxidants, regulatory considerations, stakeholder concerns, case studies, and technical references. For more information and to register see or <http://clu-in.org/studio> Or <http://www.itrcweb.org> .

## ***CLU-IN Studio Update***

New videos on the CLU-IN Studio. Several new videos were mounted on the CLU-IN Studio in August. These videos were produced by the U.S. EPA Environmental Response Team and deal with selected environmental remediation topics. The new videos, located at <http://clu-in.org/studio> , include:

1. Divex
2. Manasota Plating
3. Summitville Mine

## ***Documents***

**Remediation Technology Cost Compendium - Year 2000 (EPA 542-R-01-009)** This report, prepared by the U.S. EPA Technology Innovation Office, provides a summary and analysis of historical cost information for six commonly-applied remediation technologies: bioremediation, thermal desorption, soil vapor extraction, on-site incineration, groundwater pump-and-treat systems, and permeable reactive barriers. The cost analysis was designed to be consistent with acceptable statistical practices such as adjusting cost data to a baseline year and for U.S. geographic variation. Cost data were

obtained from federal agency sources with data extracted from approximately 150 projects. Based on these data, cost curves were developed for bioventing, thermal desorption, soil vapor extraction, and pump-and-treat systems, showing the correlation between unit cost and quantity of material treated (September 2001, 77 pages). View or download at <http://clu-in.org/techpubs.htm>. For hard copies, contact NSCEP at (800) 490-9198 or (513) 489-8190 or fax to (513) 489-8695.

**Use of Bioremediation at Superfund Sites (EPA 542-R-01-019).**

This document was produced by the EPA Technology Innovation Office. It provides site-specific information about 104 Superfund remedial action sites where bioremediation has been applied, including available performance data. It also provides a snapshot of current applications and presents trends over time concerning selection and use, contaminants and site types treated, and cost and performance of the technology (August 2001, 48 pages). View or download at <http://clu-in.org/techpubs.htm> .

**Monitored Natural Attenuation: USEPA Research Program - An EPA Science Advisory Board Review (EPA-SAB-EEC-01-004).**

The Natural Attenuation Research Subcommittee of the EPA Science Advisory Board's (SAB) Environmental Engineering Committee reviewed EPA's research program for monitored natural attenuation (MNA) of contaminants in groundwater, soils, and sediments. The Subcommittee evaluated the Office of Research and Development's (ORD) research in terms of its scientific quality and its effectiveness and utility for promoting sound decisions regarding the use of MNA as a remedy at specific sites. The Subcommittee approached this review using science and engineering disciplines related to the fate of contaminants in the subsurface (May 2001, 66 pages). View or download at <http://clu-in.org/techpubs.htm> .

**Evaluation of the Protocol for Natural Attenuation of Chlorinated Solvents: Case Study at the Twin Cities Army Ammunition Plant (EPA 600-R-01-025).** EPA's Office of Research and Development carried out an independent evaluation of the Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water (EPA/600/R-98/128). The Protocol was developed around case studies on relatively small plumes in sand aquifers. Staff in the Regions wished to know if the Protocol could be usefully applied to large plumes, or to plumes in aquifers in fractured consolidated rock. The results show that the Protocol was successful in predicting the development of the ground-water plume at the Twin Cities Army Ammunition Plant (TCAAP). The screening analysis in the Protocol predicts that the geochemical environment at TCAAP is

not favorable to rapid reductive dechlorination. The modeling portion of the study indicated that the current ground-water plume should be expected when the rate of reductive dechlorination is slow. The study also shows that natural biodegradation complements the ongoing efforts to extract contaminated ground water at the source, and should greatly reduce the time required to reduce the concentration of contaminants to U.S. EPA drinking water standards (March 2001, 49 pages). View or download at

[http://www.epa.gov/ada/download/reports/epa\\_600\\_r01\\_025.pdf](http://www.epa.gov/ada/download/reports/epa_600_r01_025.pdf) .

### **In Situ Thermal Treatment Site Profile Database (Beta Version).**

Recent developments in the area of in situ thermal treatment methods offer the potential for significantly increased ability to address subsurface contamination. Approaches to in situ thermal treatment include steam, hot air, or hot water injection, conductive heating, electrical resistive heating, and radio-frequency heating. These methods are in various stages of development and deployment, largely as a function of the cleanup problem (size and type of site, location and nature of contamination) under consideration. The In Situ Thermal Treatment Site Profile Database is an initial attempt to capture information on sites deploying or planning to deploy these methods. See <http://clu-in.org/products/thermal> . Also note on the CLU-IN Studio there is an archive of a June 2000 In Situ Thermal one-day conference. Slides for all nine presenters as well as the accompanying audio files can be accessed any time night or day. This enables anyone to see and hear the presentations given at that event. See [http://clu-in.org/thermal\\_060700/](http://clu-in.org/thermal_060700/) .

### **Cost and Performance Report for Explosives Detecting**

**Immunosensors.** This report was prepared for by the Environmental Security Technology Certification Program (ESTCP). The Naval Research Laboratory developed two methods for measuring TNT and RDX. These methods employ either the Analyte 2000 or the FAST 2000 optical instruments, both engineered by Research International in collaboration with NRL. To demonstrate these methods, extensive field trials (three for groundwater and one for soil), were conducted at several geochemically diverse sites. Data was used to test detection limits (5-10 ppb in groundwater and 50-100 mg/kg for soil), reproducibility, bias, precision, calibration, waste generation, and matrix effect on detection limits. A cost analysis for the methods was also done (September 2000, 74 pages). See <http://www.estcp.org/documents/techdocs/199713.pdf>

### **Cost and Performance Report for Electromagnetic Surveys for 3D**

**Imaging of Subsurface Contaminants.** This report was published by the DoD Environmental Security Technology Certification Program (ESTCP). The demonstration investigated the use of quasi-static EM resistivity

surveys to detect and generate 3-D images of subsurface DNAPL contamination. This EM resistivity survey technique is a surface to borehole geophysical method that generates a 3-D image of DNAPL-contaminated subsurface zones based on their high resistive properties as contrasted with non-contaminated subsurface soil, rock and groundwater. The objective was to verify that the EM technique could consistently, rapidly and accurately perform high resolution site characterization and DNAPL source delineation. This study clearly shows that EM technology will not successfully detect low concentrations of DNAPL in soil and sediments. Based on the results of the demonstration, it appears doubtful, given the types of conditions that DNAPL are thought to typically accumulate and reside in the subsurface (e.g., in small, scattered pools and ganglia), whether the EM resistivity method can distinguish between aqueous media and the DNAPLs and/or their dissolved-phase constituents (November 2000, 54 pages). See <http://www.estcp.org/documents/techdocs/199718.pdf>

**Cost and Performance Report for Continuous Emissions Monitor for HAP Metals.** Under this ESTCP project, validation of the Multimetal Continuous Emissions Monitor System (MMCEMS) was carried out in two demonstrations. The first took place at Tooele Army Depot (TEAD), Utah, on the stack emissions from a munitions deactivation incinerator. The second took place at the Retech Corporation's manufacturing facility at Ukiah, California, on the Plasma Arc Hazardous Waste Treatment System (PAHWTS). The MMCEMS employs an argon inductively coupled plasma (ICP) spectrometer as an elemental analyzer, a shrouded probe for extracting a stream of stack gas, and a patented sampling interface for plasma sample introduction. The MMCEMS measures all 14 Hazardous Air Pollutant (HAP) metals simultaneously following sample stack gas introduction into the argon plasma, which occurred at approximately one-minute intervals. Operation of the MMCEMS system is entirely automated and only minimum human interaction is required (February 2001, 48 pages). See <http://www.estcp.org/documents/techdocs/199807.pdf>

**Ground Water Currents (EPA 542-N-01-006).** GWC is a quarterly newsletter published by the EPA Technology Innovation Office. This issue highlights field testing of innovative technologies for the cleanup and characterization of ground water contaminated with DNAPL. The field tests range from a large side-by-side demonstration of technologies at Cape Canaveral, FL, to a smaller pilot study in Ogallala, NE. In addition, the use of acoustic cross-well tomography to produce permeability images of the subsurface, which can aid in locating DNAPL, is highlighted in this issue (July 2001, 6 pages). View or download at <http://clu-in.org/techpubs.htm> . For hard copies, contact (800) 490-9198 or (513) 489-8190 or fax to (513) 489-8695.

## *Conferences and Symposia*

**Reminder - ITRC Phytotechnologies, October 24-25, Amherst, MA.**

This two-day course discusses the latest applications of phytotechnologies in remediation and waste management. The curriculum focuses systems design using hands-on team problem solving and evening homework. Case studies are incorporated into each major subject area.. For more information, see <http://www.itrcweb.org>

**Reminder - ITRC Accelerated Bioremediation of Chlorinated Solvents,**

October 23-24, Pasadena, CA and December 4-5 New Orleans, LA. This two-day course examines the roles of site characterization, modeling, design, monitoring, and regulatory interaction in applying in-situ engineered bioremediation. Lectures, case studies, hands on exercises and discussion sessions are used to give participants knowledge and information that can be put together immediately. For more information, see <http://www.itrcweb.org>

**2001 ITRC Fall Conference, November 5 - 8, Long Beach, CA.**

The ITRC Fall conference will feature panel sessions on issues in remediation technology with national authorities, open sessions of eight ITRC work teams (Chemical Oxidation, MTBE, UXO, bioremediation, etc.), training for participants on six technology/technical areas, networking with public and private sector professionals and exhibits on environmental technology. For up to date agenda information and to register, see <http://www.itrcweb.org> .

If you have any questions regarding TechDirect, contact Jeff Heimerman at (703) 603-7191 or [heimerman.jeff@epa.gov](mailto:heimerman.jeff@epa.gov). Remember, you may subscribe, unsubscribe or change your subscription address at <http://clu-in.org/techdrct> at any time night or day.