

Atlanta Environmental Management, Inc.

Newsletter



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AEM Engineer Jeff Cook, P.E.



The slogan of the Metropolitan Atlanta Rapid Transit Authority (MARTA) is "Take MARTA, It's SMARTA," which is very true. Getting around the metropolitan Atlanta area is much easier using the extensive system of trains and buses and provides a welcome relief to Atlanta's highways. MARTA is also a safe way to travel and has been voted the safest system in the USA 18 times over the last 23 years. To support this city-wide transportation system, MARTA has an extensive number of stations, repair and storage facilities, and the need for environmental and engineering support. That's why we like to believe that AEM's engineer Jeff Cook is "helping MARTA think SMARTA." As part of a CH2M HILL project team, Jeff Cook and other AEM staff have provided services for MARTA in many engineering, compliance, training, CERCLA, and other environmental areas. Jeff has been the lead engineer for all AEM work over the last six years. He has managed projects

related to USTs/ASTs and Phase I & Phase II Environmental Site Assessments and has developed standard operating procedures for hazardous waste and materials management, industrial wastewater and storm water training, and emergency response planning and preparedness. As managed by Jeff, AEM provides compliance readiness training, vehicle spill training, and SPCC, SWPPP, and Storm Water Monitoring training.

Jeff graduated from Duke University in 1995 with a B.S.E. degree in civil engineering and is a registered Professional Engineer. Originally from Ohio, Jeff returned to the Cleveland area

where he worked for several years before joining AEM in 1998. Based on his previous experience, Jeff was a much needed addition to our staff and immediately became the "go to" for all aspects of remedial design and construction. He has designed a number of remediation systems including air sparging/soil vapor extraction systems, dual-phase vacuum extraction systems, pump-and-treat systems for groundwater, and design and implementation of soil excavation and disposal remedies and *ex situ* solidification of contaminated soils. He has also developed a landfill design for closure of a construction/demolition/debris landfill and provided quality assurance planning and oversight during the construction of the landfill. His well rounded environmental and engineering experience complements AEM's staff and services.

Reporting for Facilities Under DHS Chemical Anti-Terrorism Standards

EPA—Feb. 20, 2008

Facilities that manufacture, use, store, or distribute certain chemicals above a screening threshold quantity (STQ) were required to submit a CSAT Top-Screen to the Department of Homeland Security (DHS) by January 22, 2008. Based on a review of the information provided, DHS has performed or will perform certain inspections for selected facilities. However, there has been some confusion regarding nondisclosure or confidentiality agreements and other reporting requirements.

EPA reports that several facilities subject to EPA reporting requirements under the EPCRA or SARA (Title III) or the Clean Air Act (CAA) Section 112(r) have inquired about the appro-

priateness of filing reports under these legislative requirements. Facilities have cited nondisclosure or confidentiality agreements relating to implementation of DHS's new Chemical Facility Anti-Terrorism Standards (CFATS).

Nothing in the new CFATS regulations alters the requirements that apply to a facility covered under both CFATS and EPCRA or CAA 112(r) Section 27.405 of the CFATS regulations. Review and Preemption of State Laws and Regulations states, "Nothing in this regulation is intended to displace other federal requirements administered by the EPA, DOJ, Department of Labor, Department of Trans-

portation, or other federal agencies."

In the preamble to the regulation, DHS further clarifies this provision, specifically indicating that CFATS has no effect on EPCRA, CAA Section 112(r), and other laws administered by EPA.

Recent discussions between EPA and DHS officials have confirmed that the intent of the CFATS regulations remains in accordance with this understanding and that information required to be submitted under EPCRA and CAA Section 112(r) is not Chemical-Terrorism Vulnerability Information (CVI) and must, therefore, be reported.

Technology Section: Electrochemical Remediation

Electrochemical remediation (ECR), also known as electrokinetics or electro-osmosis, is a process in which an electrical field is created in the soil matrix by applying low-voltage, direct-current electrical power to electrodes placed in the soil. When the electric current flows between the anodes and cathodes, heavy metals, radionuclides, and soluble organics migrate toward the electrodes. The contaminants are deposited near the electrodes and can be removed by conventional methods, e.g., excavation, or by circulating a fluid at the electrode and removing the contaminants from the fluid.

Technology Description

The electrodes are placed in the soil in either a vertical or horizontal array. When direct-current power is applied to the electrodes, an electric field develops between the anodes and cathodes. Studies have shown that moisture in the soil forms an acid front at the anode that migrates toward the cathode. The two primary transport mechanisms for the contaminants and the soil moisture containing dissolved contaminants are electromigration and electro-osmosis.

Electromigration is the term used for the movement of cations and anions in the electric field in the direction of one or the other electrodes. Because the electromigration mechanism acts on charged particles, it primarily affects ionized inorganic compounds that are also highly soluble. These compounds include cations, such as the alkali metals, and anions, such as chlorides, nitrates, and phosphates.

Electro-osmosis is a transport mechanism whereby water moves through charged soil. This mechanism is most effective in fine-grained soil. As the water (acid front) moves from the anode to the cathode, contaminants are carried with it. This is the primary removal mechanism for soluble organic contaminants. The treated soil matrix is acidified, but it returns to equilibrium rapidly through diffusion of other anions and cations once the electric source is removed.

Design Considerations

Electrochemical remediation is applicable to highly soluble inorganic contaminants, to heavy metals such as lead, mercury, cadmium, chromium, and zinc, to radionuclides, and to soluble organic compounds. Removal rates have been reported in the range of 50% to 99%. Specific studies have shown that heavy metals and uranium were removed at a rate between 75% and 95% when the initial concentration was approximately 2,000 parts per billion (ppb). Phenol was shown to be removed at a rate between 85% and 95% with a starting concentration of approximately 500 ppb.

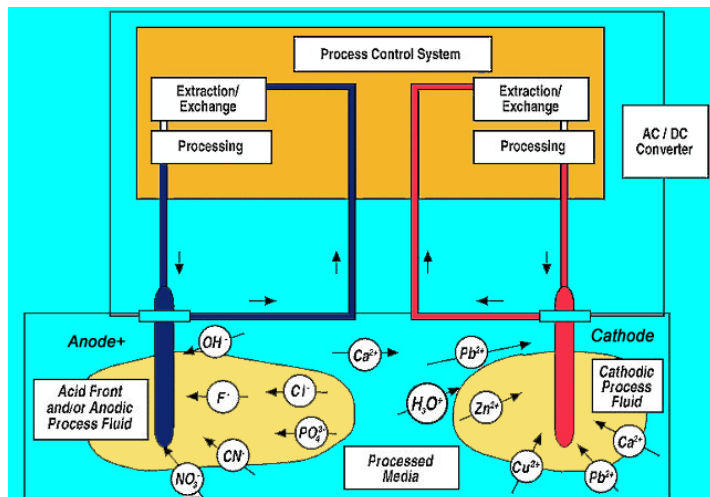
Electrochemical remediation is reported to work with both saturated and unsaturated soils. The electro-osmosis mechanism is most effective in moist, fine-grained soils. Many of the studies conducted to date have been conducted on moist, nearly saturated soils. Large metallic objects such as pipes, fence posts, drums, or other debris can reduce the efficiency of the process.

The type of electrode used is another design consideration. Metallic vs. carbon/graphite and solid vs. granular are the options. Metallic electrodes may dissolve from electrolysis and introduce the corrosion products (e.g., oxidized iron) as a residue into the soil matrix. If a circulating fluid is used at the electrodes, it is important to be aware of the chemical properties and the precipitation chemistry of the contaminants in order to maintain the proper pH of the circulating fluid. Acidification of the soil should not be a long-term problem as it has been shown that equilibrium is restored through diffusion. However, the potential for migration of contaminants resulting from the creation of an acid front needs to be considered.

Advantages

Electrochemical remediation has an advantage over conventional pump-and-treat technologies in fine-grained soils. One of the target areas for the technology is low-permeability silt- and clay-type soil. It has been shown to be effective in causing the contaminants to migrate in low-permeability soil where pumping is slow and difficult. There is a similar advantage realized over conventional soil vapor extraction in tighter formations. Another advantage over soil vapor extraction and certain other *in situ* technologies is that ECR is capable of removing both inorganic and organic contaminants. Contaminants affected by electrokinetic processes include:

- Heavy metals (lead, mercury, cadmium, nickel, copper, zinc, chromium)
- Radioactive species (CS_{137} , Co_{60} , Ur)
- Toxic anions (nitrates, sulfates)
- Dense non-aqueous-phase liquids (DNAPL)
- Cyanides
- Petroleum hydrocarbons (diesel fuel, gasoline, kerosene, and lubricating oils)
- Explosives
- Mixed organic/ionic contaminants
- Halogenated hydrocarbons (TCE)
- Nonhalogenated organic pollutants (BTEX)
- Polyaromatic hydrocarbons (PAH)



EPA Seeks Public Comment on Possible Drinking Water Contaminants

EPA—Feb. 20, 2008

EPA is requesting public comments on a list of 104 possible drinking water contaminants that are being considered for future regulation to ensure the continued protection of drinking water. Under the Safe Drinking Water Act, EPA includes on the draft Contaminant Candidate List (CCL) currently unregulated contaminants that are known or anticipated to occur in public water systems and that may require regulation. This draft CCL, which is the third such compilation, lists 93 chemical contaminants or groups and 11

microbes, and it describes the process and basis for selecting these contaminants.

The CCL process was established by the 1996 Amendments to the Safe Drinking Water Act as a mechanism to determine whether new regulations are needed to protect drinking water. Under this process EPA conducts extensive research into the occurrence and health effects of the listed contaminants before issuing new regulations or standards. In developing the draft CCL 3, the agency implemented a new approach for selecting contami-

nants, which builds upon evaluations used for previous lists and is based on substantial expert input early in the process and recommendations from a larger number of different groups, including stakeholders, the National Research Council, and the National Drinking Water Advisory Council.

The draft list includes chemicals used in commerce, pesticides, biological toxins, disinfection by-products, and waterborne pathogens. The agency evaluated approximately 7,500 chemicals and microbes and selected 104 candidates for the

final draft list based on their potential to pose health risks through drinking water exposure. The comment period began on February 21, 2008, with publication in the Federal Register, and the comment period is open for 90 days.

Additional information can be found on the EPA website at:

<http://www.epa.gov/safewater/ccl/ccl3.html>

The Federal Register publication can be found at:

<http://www.epa.gov/fedrgstr/EPA-WATER/2008/February/Day-21/w3114.htm>

OSHA Reminds Employers to Post Injury/Illness Summaries

The Occupational Safety and Health Administration (OSHA) reminds employers that beginning February 1, 2008, they must post a summary of the total number of job-related injuries and illnesses that occurred during 2007. The 2007 summary must be posted from February 1 to April 30, 2008.

"The OSHA 300 logs provide employers and employees a broad view of where injuries and illnesses are occurring at their worksites," stated Assistant Secretary of Labor for OSHA Edwin G. Foulke, Jr. "Identifying and posting injury and illness information provides employers

and employees with useful information to help ensure a more safe and healthful workplace."

The summary must include the total number of job-related injuries and illnesses that occurred in 2007 and were logged on the OSHA Form 300. To assist in calculating incidence rates, information about the annual average number of employees and total hours worked during the calendar year is also required. If a company recorded no injuries or illnesses in 2007, the employer must enter "zero" on the total line. The form must be signed and

certified by a company executive. Form 300A should be displayed in a common area where notices to employees are usually posted.

Employers with 10 or fewer employees and employers in certain industries are normally exempt from federal OSHA injury and illness recordkeeping and posting requirements. A complete list of exempt industries in the retail, services, finance, insurance, and real estate sectors is posted on the OSHA web site.

The Department of Labor's Bureau of Labor Statistics may still select exempted employers

to participate in an annual statistical survey. All employers covered by OSHA need to comply with safety and health standards. All accidents that result in one or more fatalities or in the hospitalization of three or more employees must be reported verbally within eight hours to the nearest OSHA office.

Copies of OSHA Forms 300 and 300A are available in Adobe PDF or Microsoft Excel spreadsheet format at <http://www.osha.gov/recordkeeping/index.html>.

Avoid These Common RCRA Violations

Although RCRA regulations are complex and, in some cases, difficult to understand, EPA's list of common RCRA violations are easily avoided. Some of the more common violations are described briefly below:

- Failure to clearly label and mark satellite accumulation containers with the words "hazardous waste" and other words that identify the contents of the containers, such as the chemical name [40 CFR 262.34(a)(3)]
- Failure to clearly mark and date the period of accumulation for each accumulation container [40 CFR 262.34(a)(2)]
- Failure to provide and document initial hazardous waste training [40 CFR 265.16]
- Failure to separate or otherwise protect containers of hazardous waste from other containers storing incompatible materials or wastes [40 CFR 265.177(c)]
- Failure to make hazardous waste determinations [40 CFR 262.11, 40 CFR 268.7(a), 40 CFR 268.9(a)]
- Failure to accumulate hazardous waste in a closed container except when adding or removing waste [40 CFR 265.173(a)]
- Failure to obtain a permit when storing hazardous waste for greater than 90 days [40 CFR 262.34(a), 270.10]
- Failure to inspect hazardous waste containers, specifically failure to inspect on a weekly basis [40 CFR 265.15(a), 40 CFR 265.174]
- Failure to have an adequate Contingency Plan for new operations [40 CFR 265.54(c)]
- Failure to provide secondary containment around hazardous waste container storage areas in an area with a functional floor drain [40 CFR 264.175 and 264.193]

**WE HELP SOLVE ENVIRONMENTAL
AND ENGINEERING PROBLEMS!
PLEASE GIVE US THE
OPPORTUNITY TO WORK WITH YOU.**

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ABOUT US.....



AEM is a small, woman-owned business founded in 1988 by Janet T. Hart, President.

Ms. Hart continues to manage day-to-day operations that have led to our significant growth since inception and our continued success in the environmental market. Although company growth is an objective, it is our philosophy that growth is secondary to client service and quality. Put simply, the company's primary loyalty is to its clients, not to the growth of the company, unless growth provides for better client service. Building strong and lasting relationships with our clients is the most important thing that we can do to achieve our goals and ensure our future success.

AEM is committed to providing high-quality, cost-effective environmental services with a primary goal of client satisfaction. One quality that sets AEM apart from the competition is the personalized service and attention given to clients—the direct response to our clients' needs in a timely manner. We continuously work to improve the quality of our services to our clients.

AEM actively supports a number of charities including Doctors Without Borders, the Antares Foundation, the Humane Society of the United States, the Society for the Prevention of Cruelty to Animals, and CARE.

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