



May 2007

New on the SCRDR Website

The State Coalition for Remediation of Drycleaners (SCRDR) recently posted a paper by Charles D. Rowan and Nancy Boisvert of the Tennessee Department of Environment & Conservation, Division of Remediation, Drycleaner Environmental Response Program and Richard L. Raymond Jr. and Michael D. Lee of Terra Systems, Inc. The paper entitled “Chlorinated Solvent Source Control on a Limited Budget” details the use of Slow Release Substrate (SRS™) as a remediation technology at the former Spin N’ Span Cleaners and Laundry facility in downtown Memphis, Tennessee. This paper can be viewed or downloaded at <http://www.drycleancoalition.org/pubs.cfm> on the SCRDR website.

State and National Updates

California

- On January 25, the California Air Resources Board approved amendments to California’s Air Toxics Control Measure that will result in a phase out of PCE as a drycleaning solvent over a 15 year period. Beginning in 2008, no new PCE drycleaning machines can be sold in California. By July 2010, no PCE drycleaning machines can be operated in any facility that is co-located with residents. Also effective in 2010, no PCE drycleaning machine that is at least 15 years old can be operated and any converted vented drycleaning machines must be removed from service. All PCE drycleaning machines must cease operations by January 1, 2023.

Florida

- The Hazardous Waste Cleanup Section held it’s annual Contractor Workshop February 28- March 1. Among the speakers were Dr. Frank Loffler, of the Georgia Institute Technology whose topic was Molecular Biological Tools to Support Efficient In-Situ Bioremediation, and Joseph Quinnan of Arcadis Geraghty & Miller, Inc. whose topic was Remediation Hydraulics. Mr. Quinnan is a co-author along with Fred Payne and Scott Potter, of a new Book entitled *Remediation Hydraulics*.
- The Florida Drycleaning Solvent Cleanup Program has recently injected nano-scale zero valent iron at three drycleaning sites. ABC® (Anaerobic Biochem) which contains lactates, fatty acids and a phosphate buffer has recently been injected at three drycleaning sites to stimulate biodegradation. EOS® (emulsified oil substrate) which

contains emulsified edible soybean oil has been injected at a Jacksonville, Florida drycleaning site to stimulate biodegradation.

Missouri

- Missouri's Drycleaning Environmental Response Trust (DERT) Fund currently has 24 sites enrolled into the program. This program provides funds for the investigation, assessment, and remediation of releases of chlorinated solvents from dry cleaning facilities. Since the fund began accepting applications on May 30, 2006, it has reimbursed over \$330,000 in eligible costs to participants.

North Carolina

- The North Carolina Dry-Cleaning Solvent Cleanup Act (DSCA) Program has spent the past year developing risk-based rules which are mandated by statute in order to determine site cleanup standards. Currently, these proposed rules are in the public notice period (required 60 days) which will end on June 15, 2007. DSCA's plan if all goes well is for the rules to be adopted and implemented by November 2007. In the meantime, Program staff have been overseeing extensive assessment work performed by state-hired, environmental consultants at DSCA sites. When the risk-based rules are implemented, DSCA can then evaluate sites where assessment has been completed to determine if remediation is required or whether the sites can be closed out.

South Carolina

- The South Carolina Department of Health and Environmental Control (SCDHEC) recently began conducting Expanded Initial Assessments (EIAs) at 50 drycleaner sites throughout South Carolina. The EAI offers a new approach to identify potential exposure pathways at each of the 400+ SCDHEC Drycleaner Program facilities. Once all potential exposure pathways have been identified at each site, the exposure is then managed in such a way as to reduce or eliminate potential human health risks. The current plan involves assessing an average of one site per week until all 400+ sites have been evaluated. This approach effectively separates and removes the risk component of the program from driving remedy selection, allowing SCDHEC the flexibility to determine future site cleanup approaches solely based on technical feasibility and fiscal capability.

Ecology & Environment (E&E) presented this approach to SCDHEC in the fall of 2006 and was initially assigned ten sites to test the overall concept and to design the site evaluation approach. This process used a field-based analytical screening method (Color-Tec) developed in 1997 by E&E during their initial work on the Florida DEP Drycleaner Program. Using the EIA approach on the initial ten test sites, E&E identified direct groundwater exposure impacts occurring at four of the facilities. Most of these direct impacts involved private or public drinking water systems that contained drycleaner-related compounds at concentrations exceeding South Carolina and EPA drinking water standards. These exposures were immediately mitigated by providing an alternate water supply in the cases involving private water systems and

by discontinuing the use of the affected public supply wells in the case involving a municipal water supply system.

A key aspect of the EIA approach to evaluating the potential exposure pathways at these sites is through the combination of dynamic work strategies (flexible work plans) and real-time measurement technologies such as the Color-Tec Method. Under this approach, as field data is gathered it is used to make real-time decisions for subsequent activities, which will best resolve remaining data and decision uncertainties and evaluate the potential exposure pathways.

- Last fall, two new staff members, Paul Bergstrand (PG) and John Poole (Associate Engineer), joined South Carolina's program.

Tennessee

- Tennessee Drycleaner Environmental Response Program (DCERP) Actuarial Study:

The Willis Casualty Actuarial Practice was retained to prepare an actuarial report on the DCERP Fund. The purpose of DCERP and the Fund is to provide funding and oversight for the investigation and where necessary remediation of sites contaminated with solvents from drycleaning operations. Through September 30, 2006, 75 sites had requested environmental response activities through DCERP. The first objective of the study was to estimate the eventual total cost of the activities for the 75 contaminated sites currently participating in the program. The second objective was to estimate the number, potential timing and cost of the claims for reimbursement against the Fund in future years.

It was estimated that the additional cost of the 75 known sites on September 30, 2006 would be \$22,027,399. The estimated costs for contaminated sites not yet identified as of September 30, 2006 was estimated in three different scenarios. Scenario 1 projected future claim amounts totaling \$276,418,837. The major assumption underlying Scenario 1 is that 25% of currently active sites and 50% of abandoned sites have some level of unidentified contamination that could result in a request for reimbursement after September 30, 2006. In Scenario 2 the underlying assumption was more optimistic in that only 15% of active sites have unidentified contamination and that only 25% of abandoned sites are contaminated. Under this scenario, the estimated total cost for unidentified contaminated sites was reduced to \$165,228,199. For Scenario 3 the underlying assumption was more pessimistic in that 40% of active sites have unidentified contamination and that 70% of abandoned sites are contaminated. Under this scenario, the estimated total cost for unidentified contaminated sites increased to \$422,426,162. Scenarios 1, 2 and 3 were assigned 50%, 25% and 25% probabilities respectively. Weighting the three scenarios resulted in an estimated cost of \$285,123,000 for unidentified contaminated sites as of September 30, 2006. Therefore, the estimated liabilities for both known and unidentified contaminated sites after weighting the three scenarios were \$307,150,408.

Wisconsin

- In Wisconsin, the Dry Cleaner Environmental Response Council advises the WDNR on administration of the Dry Cleaner Environmental Response Fund (DERF). The Council is required to evaluate the dry cleaner response program every 5 years, using criteria developed by the council. The Council's second five year review was published in December 2006. The major finding of the Council is that while DERF has solid revenue cash flow over the next 25 years, there is a short term cash flow deficit. The Council recommends to the Governor and Legislature that the dry cleaner license fee be increased from the current 1.8% of gross dry cleaner revenues to 2.8% and that the State issue \$8.5 million in State revenue bonds to address the short-term demand on DERF. The Council also recommends closer coordination between the WDNR and the Wisconsin Department of Revenue in an effort to identify unlicensed dry cleaners in the State. The program review can be found at <http://dnr.wi.gov/org/aw/rr/financial/council/2006govreport.pdf>

State Progress on Remediation of Dry Cleaning Sites

Remediation is currently being conducted at drycleaning sites in twelve of the thirteen Coalition states. As of May 2007, cumulative statistics for the State Coalition for Remediation of Drycleaners member states are as follows:

3537 Sites in drycleaning programs

1747 Sites where contamination assessment work has been initiated

781 Sites where contamination assessment work has been completed

376 Sites where remediation has been initiated

169 Sites where remediation has been completed

371 Sites closed

Remedial Technologies Employed at SCRD Drycleaning Sites

Soil/Sediment/Sludge Remediation:

- Excavation/Removal, including conventional excavations, trench box excavations, large diameter auger, vacuum trucks, septic tank/lift station cleanouts
- Soil Vapor Extraction (in-situ and ex-situ)
- Heated Soil Vapor Extraction
- Passive Venting
- Mobile Injection Treatment Unit

Groundwater Remediation:

- Pump & Treat
- Multi-phase Extraction
- Air Sparging
- Recirculating Wells
- Chemical Oxidation using: Fenton's Reagent, potassium permanganate, sodium permanganate, hydrogen peroxide, ozone

- Bioremediation using: HRC[®], HRC-X[™], Cl-Out, ethyl lactate, sodium lactate, potassium lactate, molasses, emulsified oil substrate, ORC[®], ABC[®], ERC, Phoster's Process[™], Vitamin B₁₂
- Bioaugmentation using: KB-1[™], Bio-Dechlor INOCULUM[™], Pseudomonas
- Co-solvent flushing
- Surfactant/Co-solvent flushing
- Co-oxidation
- Nano-scale zero-valent iron
- Diffusive Emitter
- Permeable Reactive Barrier (iron filings)
- Zero-Valent Iron Soil Mixing
- Persulfate
- Zero valent iron

EPA Soil Gas Sampling Workshop Presentation Available

Copies of the presentations given at the March 21 and 22, 2007 EPA workshop on soil gas sampling and analytical methods can be viewed or downloaded at <http://iavi.rti.org/WorkshopsAndConferences.cfm>. The workshop was held in conjunction with the American Association for Environmental Health and Sciences conference in San Diego, California.

Upcoming Events

- September 24-26, 2007, Portland, Maine – 2007 National Groundwater Association's (www.ngwa.org) and U.S. Environmental Protection Agency's Fractured Rock Conference: State of the Science and Measuring Success in Remediation.
- September 26-28, 2007, Providence, Rhode Island – Air & Waste Management Association's Vapor Intrusion Conference – Vapor Intrusion: Learning from the Challenges http://www.awma.org/events/view_event.html?typeid=1&id=11.
- November 5-6, 2007, Houston, Texas – 2007 National Groundwater Association's (www.ngwa.org) Petroleum Hydrocarbons and Organic Chemicals in Ground Water: Prevention, Detection, and Remediation Conference.
- December 4-7, 2007, Orlando, Florida – 2007 National Groundwater Association's (www.ngwa.org) Groundwater Expo and Annual Meeting.

SCRD Facts

- As of May 2007, there are 461 subscribers to the SCR D newsletter.
- The SCR D website received 12,025 visits during April 2007.

Newsletter Subscription

If you would like to be placed on the subscription list for the SCRDR newsletter please go to the following address <http://www.drycleancoalition.org/newsletter.cfm>. Copies of previous newsletters can be viewed at <http://www.drycleancoalition.org/pubs.cfm> on the SCRDR website.

SCRDR members are state governments that have established programs to fund remediation of drycleaner sites. Current member states include Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin. California, New York, and Virginia, which do not have formal programs but are active in drycleaner remediation under other authorities, also participate in Coalition activities. SCRDR provides a forum for states to share programmatic, technical, and environmental information to improve the remediation of drycleaner sites. SCRDR was established in 1998 and receives technical, management, and training support from the U.S. EPA Office Superfund Remediation and Technology Innovation (OSRTI) and the National Ground Water Association (NGWA).