



December 2010

New on the State Coalition for Remediation of Drycleaners Website

The State Coalition for Remediation of Drycleaners (SCRD) recently posted a revised version of the *Conducting Contamination Assessment Work at Drycleaning Sites* report on its website at <http://www.drycleancoalition.org/download/assessment.pdf>. This report, prepared by SCRD members, provides helpful information for states and others involved in conducting site characterization work at drycleaning facilities.

There are approximately 36,000 active drycleaning facilities in the United States and an estimated 75% of these are probably contaminated. This includes commercial, industrial and coin-operated facilities where soil and groundwater have been contaminated by drycleaning solvents. In addition, there are an unknown number of former drycleaning sites that are also contaminated. Since a majority of the drycleaning facilities are located in urban areas, drycleaning solvent contamination has impacted a large number of public water supply wells and threatens many other well fields. This report includes background information on drycleaning operations, planning and conducting site assessment/characterization and a range of assessment technologies available. It also includes examples of the assessment/characterization approaches used by several SCR D states.

SCR D Holds Annual Meeting

The SCR D held its annual meeting in conjunction with the U.S. EPA's Technical Support Project (TSP) meeting from November 16-18 in Orlando, Florida. SCR D and TSP members also participated in a field trip to the Cape Canaveral Air Force Station to observe the various cleanup technologies being utilized at the station.

Representatives from member states Alabama, Connecticut, Florida, Illinois, Kansas, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin attended the meeting. Representatives from Alaska, California, Colorado, Delaware, New Jersey, New York, Oklahoma, and Wyoming also participated in the meeting.

This year's meeting included program briefings by the member states; panel discussions on public meetings, green remediation and program revenue trends; and the following case studies and presentations:

- Insitu Thermal Treatment (NY)
- Ongoing Solvent Releases at Active Drycleaning Operations (FL)
- Removal Using Large Diameter Borings (KS)
- Environmental Compliance Training (TN)
- Cleanup Costs (OR)
- Indoor Air Sampling (NC)
- State Drycleaner Fund Study (OK)
- Chemical Oxidation via Gravity Feeding (IL)
- Impacts of Recession on Cleanups (VA)
- Sunshine Cleaners (SC)
- Alabama Drycleaner Program History (AL)

During the business portion of the meeting Alaska and Delaware were voted into the coalition as represented states. Scott Huckstep of the Missouri Drycleaning Environmental Response Trust Fund was elected as the new Chair of the SCRCD and Terry Evanson from Wisconsin is the new Chair of the Project Management/Technical Issues Subgroup and John Powers from North Carolina is the new chair of the Program Development/Administrative Subgroup. The SCRCD would like to thank Bob Jurgens, the outgoing Coalition Chair, Dan Switek, outgoing Project Management/Technical Issues Subgroup Chair and Lisa Appel, outgoing Program Development/Administrative Subgroup Chair for all of their hard work during the past two years.

The 2010 meeting agenda, state updates and case study presentations will be available for viewing on the SCRCD website. Summaries of past meetings and conference calls can be found on the website at <http://www.drycleancoalition.org/members.cfm>.

State and National Updates

Alabama

- This is the 11th year that ADEM's Air Division has provided free compliance calendars to over 100 dry cleaners. Primary users of perchloroethylene (PERC) find the calendar's guidance and record-keeping valuable. These calendars provide instructions for PERC Dry Cleaners Status Update, instructions for calendar usage, logs for the use and storage of dry cleaning chemicals, and air quality and hazardous waste summaries and compliance tips.

Florida

- **In Situ Chemical Oxidation at Florida Drycleaning Sites**
To date the Florida Drycleaning Solvent Cleanup Program has conducted in-situ chemical oxidation at 17 drycleaning sites. Oxidants/techniques utilized include: ozone sparging – one site, calcium peroxide/hydrogen peroxide – one site, potassium permanganate – six sites, sodium percarbonate – one site, Fenton's Reagent – seven sites and hydrogen peroxide – one site.

The chemical oxidant was introduced via injection wells at 12 of the sites. The oxidant was introduced via direct push technology at two sites, via lance injection at one site and by a combination of injection wells and direct push technology at two sites. Recirculation systems were employed to effect a better distribution of the oxidant at two of the sites. The number of injection points (wells plus direct push or lance injection points) ranged from two to 85.

At all but one of the sites, injections were into the saturated zone. At one site, injection was into the unsaturated zone and into the top of the water table. The lithology of the treated aquifers was predominantly unconsolidated clastics, generally very-fine to fine-grained sands.

The concentrations of hydrogen peroxide injected in Fenton's Reagent applications ranged from 8% to 25% (one event) but the most common concentration was 12%. A 1% hydrogen peroxide solution was injected as a polishing agent at one site. From two to six injection events were conducted at Fenton's Reagent sites. Injection volumes of hydrogen peroxide solution per injection event ranged from 500 gallons to over 30,000 gallons.

The concentrations of potassium permanganate injected ranged from 4,780 to 7,832 mg/L. The amounts of potassium permanganate injected per injection event ranged from 280 to 42,440 pounds.

Illinois

- The PERC Task Force has developed a conceptual legislative outline for the structured phase-out of perc in drycleaning operations in Illinois. The outline calls for the elimination of the use of perc in drycleaning operations as of January 1, 2030 and includes requirements encouraging industry movement toward the use of alternative solvents prior to 2030. The PERC Task Force was comprised of 14 members that included drycleaning, solvent supply, local government, environmental and academic organizations with a broad range of expertise and varied perspectives.

Kansas

- The Kansas Drycleaning Program has focused on source soil removal activities in 2010. Several factors have contributed to this including demolished former facilities, unoccupied facilities that enable easier access, building interior excavations approved by facility tenants and the use of alternative removal techniques (i.e. large diameter augers), among others. Removal of the source area soils is one of the best means to reduce long term contributions to groundwater impact. We have been fortunate to be able to address this issue at several sites this year. Otherwise, we continue to address soil and groundwater impact through the use of soil vapor extraction, air sparging, enhanced bioremediation, hydraulic containment, air stripping, granular activated carbon treatment and in-situ chemical oxidation.

In the new year, we hope to perform preliminary assessments at the 54 sites that have no additional assessment activities other than provided by applicants to the Dry Cleaning Trust Fund. We plan to utilize in-house staff to perform these assessments to confirm our internal ranking of the sites in our program.

Minnesota

- The Commissioner of the Minnesota Pollution Control Agency (MPCA) has authority to adjust fees to drycleaners annually in order to maintain an annual income to the Dry Cleaner Environmental Response and Reimbursement Account (Account) of \$650,000. In order to meet the income objective, the Commissioner of the MPCA raised solvent and registration fees in FY11 (as of July 1, 2010). The MPCA has been able to reimburse several private parties who have been waiting for reimbursements; however, reimbursement of State Superfund drycleaner cleanup costs is currently on hold. The MPCA must ensure a sufficient balance remains in the Account to provide for reasonably sizeable reimbursements each fiscal year (the statute limits reimbursements to 20 percent of the Account balance at the beginning of the fiscal year). The MPCA is also looking into other ways to make sure the fund remains in the black.

Missouri

- The Missouri Department of Natural Resources' Drycleaning Environmental Response Trust (DERT) Fund recently issued a Certificate of Completion for the former American Cleaners site in Bridgeton, Missouri. The drycleaner operated from the early 1970's until it closed in mid-2004. A Phase II Environmental Site Assessment (ESA) conducted in 2005, identified the presence of perchloroethylene (PCE) and several of its chemical breakdown byproducts that were above the department's allowable concentrations in the soil and groundwater. Although no specific "solvent spill event" was documented at the site, it is thought that the subsurface contamination resulted from normal drycleaning operations conducted over a 30-year period.

In late 2007, the site was enrolled in the DERT Fund. Further site investigations resulted in the installation of seven groundwater monitoring wells located both inside and outside of the former drycleaners. Groundwater from the monitoring wells was sampled and monitored on a quarterly basis for over two years to delineate the extent and degree of chlorinated solvent contamination.

In late 2009, the participant's consultant conducted a risk assessment in accordance with the *Missouri Risk-Based Corrective Action (MRBCA) Technical Guidance* document. The results of the risk assessment confirmed that remaining contaminant levels in the soil and groundwater on and near the site were below MRBCA's target levels for restricted (i.e., non-residential) use of the site. Therefore, an Environmental Covenant limiting the site to non-residential use and prohibiting the domestic use of groundwater was filed in the property's chain of title.

This is the ninth DERT Fund site to receive a Certificate of Completion. To date the fund has reimbursed \$1,335,199 in eligible costs to its participants.

New Jersey

- The definition of “Vapor Intrusion – Immediate Environmental Concern (IEC)” is being changed from when indoor air levels exceed the indoor air screening level (IASL) to when indoor air levels exceed the rapid action levels (RALs). RALs are listed in Table 2 of the Vapor Intrusion Guidance document (VIG); http://www.nj.gov/dep/srp/guidance/vaporintrusion/vig_tables.pdf.

The rule proposal, at N.J.A.C. 7:26E-1.18(f), includes new receptor evaluation requirements for the notification, mitigation and reporting when indoor air levels exceed IASL and are equal to or below the RAL. This new class of cases is referred to as “vapor concern” (VC). Based on this new class, existing vapor intrusion IEC cases may no longer be IEC cases. If the data from all of the existing vapor intrusion receptors are equal to or below the RAL, then the case is now a VC case. If data from any of the existing VI IEC receptors are above the RAL, then the case is still an IEC with the corresponding source control requirements.

North Carolina

- The Dry-Cleaning Solvent Cleanup Act (DSCA) Program over the past year has focused on vapor intrusion issues, especially in spaces adjacent to active and abandoned drycleaning facilities. Subslab vapor and indoor air sampling have identified a number of sites where vapors from soil, groundwater and building contamination are impacting indoor air at levels requiring immediate mitigation. Sample results have also revealed that in some commercial buildings that host multiple businesses and operating perc dry cleaners, elevated perc levels in some tenant spaces appear to be caused by vapors generated from the normal operations of the drycleaners rather than from contaminated soil or groundwater. While the concentrations found are below Occupational Safety and Health Administration permissible exposure limits for the work place, some do exceed the remediation level used by DSCA for indoor air at commercial buildings if the perc originated from impacted soil or groundwater.

In light of this new information as well as the draft toxicological review for perc released by EPA in 2008, a study group comprised of stakeholders representing industry, environmental conservation, government and academic organizations was formed in September 2010. The group’s mission will be to reevaluate the conclusions of a 2001 report on alternative drycleaning solvents and technologies prepared by a similar stakeholder group and to generate an updated report of the group’s findings and recommendations. This new report is anticipated to be completed in early 2011.

Oregon

- DEQ has adopted the 2006 NESHAP drycleaner ACDP requirements. Fees generated by new permits and registration are funding inspections to improve compliance.
- An expedited enforcement process being implemented allows inspectors to issue field citations during inspections. This will be implemented by the end of the calendar year for the Dry Cleaner Program. The purpose of the field citation is to make enforcement more efficient for both the agency and dry cleaners. The field citation is similar to a traffic ticket issued by the inspector at the conclusion of the inspection. With the citation, the dry cleaner is notified of the violations, corrective actions that need to be taken, the timeline for the corrective action, and applicable penalties for the violations.

Texas

- In fiscal year 2011, the TCEQ Dry Cleaner Remediation Program expects to spend approximately \$6.5 million on assessment and remediation at 109 sites. The most common remediation methods have been soil vapor extraction, excavation (soils) and in-situ chemical oxidation, bioremediation, and multi-phase extraction (groundwater).

The Dry Cleaner Environmental Response Rules were amended to allow the TCEQ to issue a notice of violation to the owner or operator of a facility or drop station that is not registered. If the owner or operator does not correct the violation, the TCEQ may order the facility or drop station to cease operation.

State Progress on Remediation of Dry Cleaning Sites

Remediation is currently being conducted at drycleaning sites in all of the member states. As of December 2010, cumulative statistics for the State Coalition for Remediation of Drycleaners member states are as follows:

3,811 Sites in drycleaning programs
 2,215 Sites where contamination assessment work has been initiated
 1,340 Sites where contamination assessment work has been completed
 618 Sites where remediation has been initiated
 215 Sites where remediation has been completed
 772 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
- Heated Soil Vapor Extraction
- Mobile Injection Treatment Unit
- Passive Venting

- Soil Vapor Extraction (in-situ and ex-situ)
- Sub-slab Depressurization System

Groundwater Remediation:

- Air Sparging
- Bioaugmentation using: KB-1™, Bio-Dechlor INOCULUM™, Pseudomonas, Co-solvent flushing
- 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 / B₁, chitin, corn syrup, vegetable oil, Bio Rem H-10™ , and ChitoRem®
- Chemical Oxidation using: Fenton's Reagent, potassium permanganate, sodium permanganate, hydrogen peroxide, ozone, Cool-Ox™, persulfate
- Co-oxidation
- Diffusive Emitter
- Electrical Resistance
- Granular activated carbon
- Monitored Natural Attenuation (MNA)
- Multi-phase Extraction
- Nanno-scale zero-valent iron
- Permeable Reactive Barrier (iron filings)
- Pump & Treat
- Recirculating Wells
- Surfactant/Co-solvent flushing
- Vapor control/venting
- Zero-valent Iron Soil Mixing
- Zero-valent iron

Upcoming Events

- February 7-10, 2011, New Orleans, Louisiana – Sixth International Conference on Remediation of Contaminated Sediments
(<http://www.battelle.org/Conferences/sediments/index.aspx>).
- May 1-5, 2011, Baltimore, Maryland – 2011 NGWA Ground Water Summit and 2011 Ground Water Protection Council Spring Meeting (#5095)
(<http://www.ngwa.org/summit2011/index.aspx>).
- April 3-5, 2011, Philadelphia, Pennsylvania – 14th National Brownfields Conference
(<http://www.epa.gov/brownfields/bfconf.htm>).
- June 1-3, 2011, University of Massachusetts-Amherst – International Conference on Sustainable Remediation 2011: State of the Practice
(<http://www.umass.edu/tei/conferences/SustainableRemediation/>).

- June 27-30, 2011, Reno, Nevada – The Eleventh International In Situ and On-Site Bioremediation Symposium
(<http://www.battelle.org/conferences/bioremediation/index.aspx>).
- May 21-24, 2012, Monterey, California – Eighth International Conference on Remediation of Chlorinated and Recalcitrant Compounds
(<http://www.battelle.org/conferences/chlorinated/index.aspx>).

SCRD Facts

- As of December 17, 2010, there are 691 subscribers to the SCR D newsletter.
- The SCR D website received an estimated 5,799 visits during the month of November 2010.

Newsletter Subscription

If you would like to be placed on the subscription list for the SCR D 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 SCR D website.

SCR D 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. Alaska, California, Delaware, Maryland, New Jersey, New York, and Virginia, which do not have formal programs but are active in drycleaner remediation under other authorities, also participate in Coalition activities. SCR D provides a forum for states to share programmatic, technical, and environmental information to improve the remediation of drycleaner sites. SCR D was established in 1998 and receives technical, management, and training support from the U.S. EPA Office of Superfund Remediation and Technology Innovation (OSRTI).