



State Coalition for Remediation of Drycleaners

10 YEAR

Accomplishments Report

Introduction

If you're like most Americans, you probably own at least one article of clothing that bears the label "dryclean only." In fact, the ritual of dropping off delicate fabrics at the local drycleaning establishment has become a regular errand for most of us in the past half century. Rarely, however, do we give much thought to the potent chemicals that are used to get the dirt, ketchup, and red wine stains out of our favorite new sweater. If these chemicals are handled improperly, through leaks, spills, and improper disposal, they can make their way into the soil and groundwater beneath the places where we live, work, and play. Contamination from drycleaners often is the result of past industry-accepted practices rather than the typical spill or release common with other types of contaminated sites. Cleaning up contaminated soil and groundwater at active and inactive drycleaner sites is an issue facing state governments and drycleaners, alike. Soil and groundwater contamination by drycleaning solvents is an especially critical issue in areas where groundwater serves as the primary drinking water source. In addition, the migration of volatile organic compounds (VOCs), into indoor air in homes and buildings from underlying contamination in soil and groundwater is a concern.

The State Coalition for the Remediation of Drycleaners (SCRD) has worked since 1998 to foster collaboration among the states to improve and ensure the effectiveness of the cleanup of environmental contamination from drycleaner sites. SCRD's work has been supported by the U.S. Environmental Protection Agency (EPA) Technology Innovation and Field Services Division (formerly the Technology Innovation Office) and the National Ground Water Association (NGWA), through a cooperative agreement with EPA. SCRD is composed of 13 states—Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin—that have enacted formal drycleaner remediation programs. While these formal programs vary, they generally require fees paid by drycleaners and/or solvent suppliers, registration or licensing of drycleaners, compliance with applicable federal and state laws, and implementation of pollution prevention measures. Five states—California, Maryland, New York, New Jersey and Virginia—are active in the remediation of drycleaner sites under other authorities, such as state Voluntary Cleanup Programs under Superfund or Brownfields programs, and participate in SCRD as Represented States.

"SCRD has helped the Kansas program by providing access to technical representatives from other states. We were able to share information on assessment and remediation that let us adjust field techniques and identify innovative remedial approaches. The group projects also forced us to look in depth at some of our remedial projects, which helped identify key reasons for project success and failure that we otherwise may not have noticed."

—Bob Jurgens,
Kansas Department of Health and the Environment

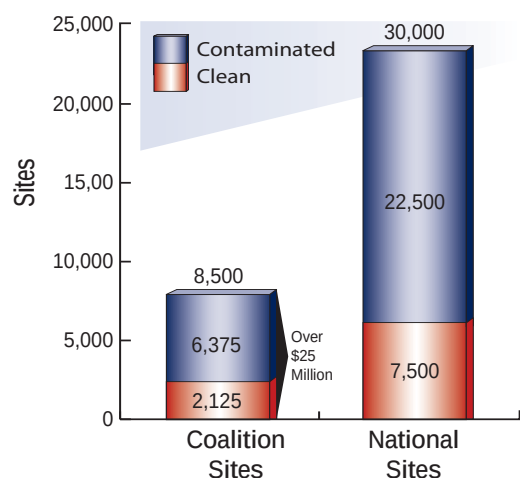
Over its 10-year history, SCRD has succeeded in drawing attention to the drycleaner site contamination problem through its outreach programs, including its popular Internet site, which can be found at www.drycleancoalition.org. More importantly, SCRD has documented and shared technical information about innovative technologies used to clean up drycleaner sites and lessons learned in applying these technologies with site cleanup managers across the country. This has served to expand the knowledge and capacity needed to address drycleaner site contamination by state and tribal governments and site owners having to deal with these issues. In addition, SCRD members have worked with the drycleaning industry in their respective states to encourage pollution prevention practices that greatly reduce the potential for contamination.

Scope of the Problem

According to the Drycleaning and Laundry Institute International, there are approximately 30,000 drycleaners in the United States (Figure 1). A 2001 SCRD study estimated that as many as 75% of U.S. drycleaning facilities were contaminated.¹

Environmental contamination at a drycleaner site can occur from spills and leaks of solvent. The solvent used by over 90% of the drycleaning industry today is perchloroethylene, or perc (also known as tetrachloroethylene or PCE).² Perc is a dense non-aqueous phase liquid (DNAPL) and is heavier than water. As such, it can penetrate concrete and can sink through floor cracks. Perc may pose serious health hazards if exposure is not properly controlled³. Perc is a listed hazardous substance⁴ and is classified as a pollutant in both air⁵ and water⁶ regulations. Other chlorinated solvents used in drycleaning operations include:

Figure 1. Sites Covered by a Drycleaner Program



Source: SCRD Presentation, 2002 State Superfund Managers Symposium, August 12, 2002, Scottsdale, AZ

- ▶ Carbon tetrachloride,
- ▶ 1,1,1-Trichloroethane,
- ▶ 1,2-Trichloro-1,2,2-trifluoroethane, and
- ▶ Trichloroethylene (TCE).

Petroleum solvents used in drycleaning operations include:

- ▶ Naphtha,
- ▶ Benzene,
- ▶ White gasoline,
- ▶ Stoddard solvent,
- ▶ 140 flash solvents, and
- ▶ New, high flash-point synthetic petroleum solvents.

More environmentally friendly types of solvents, such as carbon dioxide and silicon-based solvent, also have been introduced in recent years.⁷

Historically, many drycleaners disposed of wastes containing solvent by pouring wastewater into sanitary sewers, septic tanks, storm sewers, and floor drains; throwing spent filters and sludge into the trash; or dumping wastewater on the ground outside their facilities. In addition to contamination associated with waste disposal, solvents have been released to the environment during solvent delivery, transfer, and storage and through drycleaning equipment operation and maintenance. These practices have resulted in wide-

spread contamination of soil and groundwater in urban areas and impacts to drinking water aquifers.⁷

Types of State Drycleaner Remediation Programs

While the formal programs in SCRD member-states vary, most consist of:

- ▶ A fee or tax mechanism that funds drycleaner site cleanup. (For example, Alabama, Minnesota, Texas, and other states charge annual registration fees; Illinois, Kansas, Oregon, and others charge fees on drycleaning solvent; Connecticut, Florida, and others collect gross receipts taxes.)⁸
- ▶ Requirements that facilities or parties must meet to be eligible for funding assistance. (For example, among facility requirements under their programs, Missouri requires that abandoned facilities must be documented to the Missouri Drycleaning Environmental Response Trust (DERT) program by July 1, 2009, to be eligible for cleanup under the state's DERT Fund, South Carolina, Tennessee, and others require that there have been no reports of gross negligence or violation of laws against the facilities)⁸
- ▶ A method for prioritizing drycleaner sites for funded cleanups. (For example, Illinois, Kansas, North Carolina, and Oregon use a numerical score based on risk to human health and the environment to rank sites.)⁸
- ▶ Regulations for implementing the program, usually on a state-lead or reimbursement basis. All SCRD states have regulatory authorities associated with their drycleaner cleanup programs.⁸

“SCRD has provided the opportunity to share information, participate in technical discussions, and observe the progress of other states as their programs mature, providing invaluable lessons for Virginia (which cleans up drycleaner sites through its Voluntary Remediation Program). VRP has been able to cite parallel issues and lessons from other states in discussions with VRP participants, leading to a better participant understanding of the program and the consistency of it with other states.”

—Meade Anderson,
Virginia Department of Environmental Quality

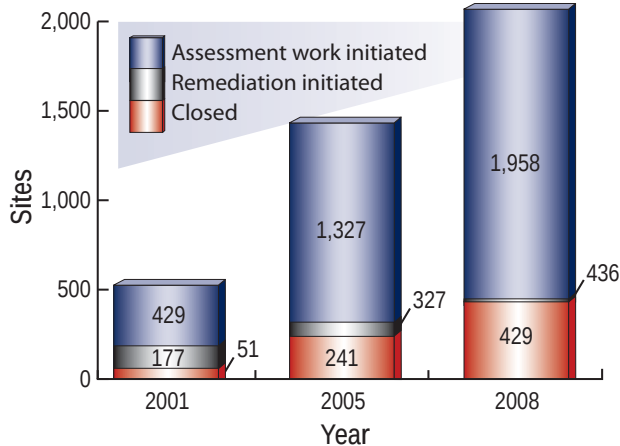
“SCRD has been a great resource for the Texas Drycleaner Remediation Program during the program development phase and, more recently, as we have begun to assess and remediate sites. SCRD enabled us to better understand other established state programs, which we used as models for the development of our Registration and Remediation programs.”

—Richard Scharlach,
Texas Commission on Environmental Quality

Major benefits offered to drycleaner participants in these programs are some level of liability protection and funds for cleaning up their sites, whether these cleanups are performed by the state or by the site owners/operators.

State drycleaner programs not only protect the public and provide a cleaner, safer environment. In addition, most of these programs require pollution prevention/best management practices to reduce or eliminate future releases and provide cost savings for drycleaner owner/operators without the financial resources needed to clean up their sites.

Figure 2. Progress Achieved in Addressing Contamination at Drycleaner Sites



Note: In 2001, there were only 11 SCRD states.

Source: SCRD Presentation, 2001 International Containment & Remediation Technology Conference and Exhibition, June 2001, Orlando, FL

SCRD Objectives

The Coalition's primary objectives are to provide a forum for the exchange of information and the discussion of implementation issues related to established state drycleaner programs; share information and lessons learned with states without drycleaner-specific programs; and encourage the use of innovative technologies in drycleaner remediation. The day-to-day work of the Coalition has been carried out by subgroups addressing two major areas:

- ▶ Program Development/Administration—Including general administrative issues related to the formal programs in SCRD member states, fee/fund solvency issues, and benefits associated with the various programs; and
- ▶ Project Management/Technical Issues—Including issues related to the actual cleanup of drycleaner sites and lessons learned from these cleanups that can help improve decision-making by drycleaner site managers across the country.

SCRD Accomplishments

The energy and dedication of SCRD's members over its 10-year history have resulted in a number of important accomplishments. The example set by SCRD members has served as a resource for formulating drycleaner-specific cleanup programs in other states. In addition, individual SCRD members have provided advice and administrative and technical information to colleagues over the years in states contemplating approaches to cleaning up drycleaner sites. For example, the Texas Drycleaner Environmental Response Program was created in 2003, and shortly after that, Texas became a SCRD member.

As of May 2008, the formal programs in the 13 SCRD states cumulatively covered a total of 3,663 sites.⁹ Remediation is currently being conducted at drycleaner sites in all SCRD states. Figure 2 indicates the progress achieved in addressing drycleaner contamination in SCRD states.

Since SCRD's inception, SCRD members have held twice yearly meetings, which featured technical training courses as well as presentations to encourage and facilitate technology transfer among SCRD members and Represented States. In addition, SCRD members have made presentations to national organizations, including the Association for State and Territorial Solid Waste Management Officials (ASTSWMO), and the Interstate Technology Regulatory Council (ITRC). In addition, they have presented papers at major national conferences and symposia, including:

- ▶ Brownfields 2003,
- ▶ the 14th Annual West Coast Conference on Soil, Sediment and Water (2004),
- ▶ the 2005 Battelle International In Situ and On-Site Bioremediation Symposium,
- ▶ University of Massachusetts' 23rd Annual International Conference on Soils, Sediments, and Water (2007), and
- ▶ Battelle's Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds (2008).

These appearances have helped to educate thousands of environmental researchers, remediation consultants and engineers, and state, tribal, and federal site cleanup professionals about the drycleaner contamination problem, the variety in state-mandated programs to clean up drycleaners, and the innovative technologies being used in drycleaner remediation projects.

A 2007 SCRD study of 114 sites in 15 states for which comparable information was available showed that innovative remedial technologies, including chemical oxidation, bioremediation, recirculating wells, surfactant/cosolvent flushing, permeable reactive barriers, and soil mixing using zero-valent iron, have been used as remedies at contaminated drycleaning sites (see Figures 3 and 4).¹⁰

SCRD has helped state, tribal, and federal site cleanup professionals advance the state of the art in drycleaner site remediation by documenting technical information about actual drycleaner site cleanups and sharing this information via its Web site. The profiles of 117 drycleaner remediation projects help site cleanup managers across the country make more informed decisions related to their sites. Data in each profile include site name, location, and description of the site; hydrology, ground-water, and soil contaminants present; remediation technologies used; results achieved; costs; lessons learned; and point(s) of contact for further information.

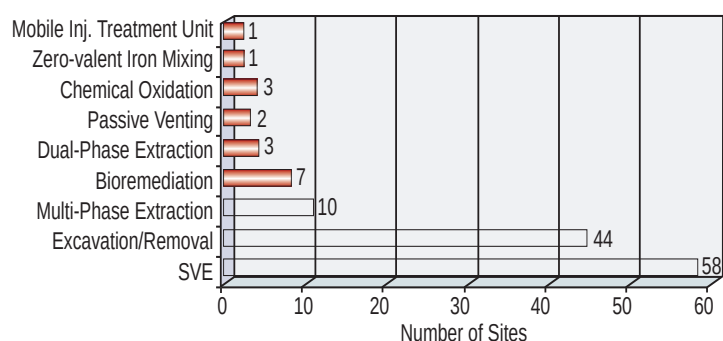
In addition, SCRD members have worked with the drycleaning industry in their respective states to encourage pollution prevention practices that greatly reduce the potential for contamination.

SCRD uses its popular Internet site to provide programmatic and technical information related to drycleaner remediation to thousands of users. The site typically receives 10,000 to 11,000 visits each month, and about 25 percent of those who visit the site come back more than once. Technical and admin-

istrative publications developed by SCRD are regularly posted on the site. These include:

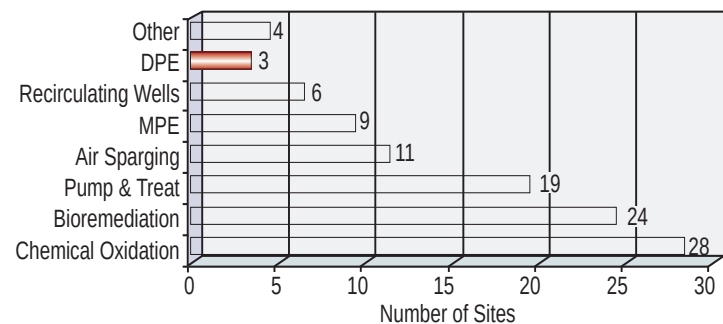
- ▶ Proceedings of SCRD's semi-annual meetings, many of which include technical training, and regular conference calls;
- ▶ SCRD's twice-yearly subscription newsletter;
- ▶ A searchable on-line database of "Chemicals Used in Drycleaning Operations" to help those assessing and remediating contaminated drycleaner sites and regulators responsible for compliance inspections at drycleaning facilities;
- ▶ A "Bibliography of Drycleaning Resources" that compiles drycleaning- and remediation-related references from a variety of sources;

Figure 3. Soil Remedial Technologies at Drycleaning Sites



Source: Comparison of Remedial Systems Employed at Drycleaner Sites, State Coalition for Remediation of Drycleaners, August 2007.

Figure 4. Groundwater Remedial Technologies Employed at Drycleaning Sites



Source: Comparison of Remedial Systems Employed at Drycleaner Sites, State Coalition for Remediation of Drycleaners, August 2007.



Solid Waste and
Emergency Response
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Environmental Protection Agency
National Service Center for Environmental Publications
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- ▶ “State Approaches for Drycleaner Remediation Programs” that discusses primary components of state-mandated drycleaner cleanup programs; and
- ▶ Periodic reports on the use of innovative technologies for drycleaner remediation.

In addition, the Web site includes a SCRD-developed virtual tour of a drycleaning facility and links to health-related sites, each individual SCRD member’ programs, and public and private sector sites providing information on vapor intrusion, innovative site characterization and cleanup technologies, and the drycleaning process. Information on drycleaning chemicals and notices of conferences and events of interest also can be found on the SCRD Web site.

Endnotes

1. Schmidt, Robin, R. DeZeeuw, L. Henning, and D. Trippler. June 2001. State Programs to Clean Up Drycleaners. State Coalition for Remediation of Drycleaners. www.drycleancoalition.org/survey/
2. Drycleaning and Laundry Institute International. www.ifi.org/industry/industry-profile.html
3. U.S. EPA. 1996. Plain English Guide for Perc Cleaners, EPA 305-B-96-002. www.epa.gov/dfe/pubs/garment/perc/index.htm
4. Resources Conservation and Recovery Act (40 CFR 260-268).
5. Clean Air Act of 1970, National Emission Standards for Hazardous Air Pollutants (40 CFR Parts 61 and 63).
6. Safe Drinking Water Act (40 CFR Part 144).
7. Dukes, Craig, et al. June 2005. Technology Assessment for Remediation at Solvent Contaminated Drycleaner Sites. www.drycleancoalition.org/download/remediation_paper.pdf
8. State Drycleaner Programs, State Coalition for Drycleaner Remediation. <http://www.drycleancoalition.org/survey.pdf>
9. State Coalition for Drycleaner Remediation NEWS, June 2008. <http://www.drycleancoalition.org/download/news0608.pdf>
10. Cathcart, Eric F., B. Jurgens, and W. Linn. August 2007. Comparison of Remedial Systems Employed at Drycleaner Sites. www.drycleancoalition.org/download/site_profile_paper.pdf