

# South Carolina Drycleaning Restoration Trust Fund Program Status Report January 15, 2008



South Carolina Department of Health and Environmental Control  
Bureau of Land and Waste Management  
Site Assessment and Remediation Division

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## **1. Introduction**

This report is provided to the South Carolina General Assembly as part of the requirement of Article 4 of Title 44, Chapter 56 of the 1976 Code of Laws, Section 44-56-430 Part C. It contains the financial obligations as well as a 5-year budget projection as required.

In 1995, the South Carolina General Assembly created the South Carolina Drycleaning Restoration Trust Fund (the Fund) to address environmental contamination resulting from drycleaning activities in South Carolina. The Fund was formed at the urging of the drycleaning industry to protect small drycleaners from the potentially devastating financial responsibility of environmental problems at their facilities. Many of these problems date back numerous years and have resulted from operational and disposal practices that were common before the industry was environmentally regulated. Since small businesses rarely have the financial capital to deal with such issues, problems of contamination were often not addressed.

Several hundred drycleaners initially joined the Fund, but not every drycleaner in South Carolina participated. Drycleaners who used petroleum-based solvents were given a one-time opportunity in 1995 to opt-out of the Fund. These businesses are not required to pay the annual fees or solvent taxes paid by participating drycleaners, but by not participating, they are also not allowed to reap the benefits of the Fund if contamination is ever discovered on their property. Over the years, some of these original “opt-outs” have since chosen to participate in the Fund, which is allowed for by statute.

When the Fund was created, it was known that contamination would likely be found, but the extent of the problem has proven to be larger than initially understood. Since field investigations of the highest priority drycleaning sites began, contamination plumes have been found in groundwater at drycleaners across South Carolina. In addition, SCDHEC has confirmed public and private water supply systems as well as streams and other surface water to be impacted by drycleaning chemicals. In short, drycleaning-related environmental contamination has been found on almost every site investigated to date.

There are several reasons for the presence of solvents in the soil and groundwater around drycleaning facilities. The most commonly used drycleaning solvents, perchloroethylene (PCE, or “perc”, an industrial chemical) and various compounds derived from petroleum (Stoddard solvent), easily pass through many materials, including the concrete floors common at drycleaning plants. Most of the older drycleaning transfer machines, which require solvent-laden clothes to be moved from the machine to a dryer, were a source of release to the environment. Regulations now require that the floors in drycleaning plants be sealed with epoxy paint or other impermeable surface. Newer dry-to-dry drycleaning machines are designed to both wash and dry clothes in the same machine, thus avoiding drips and spills occurring during the transfer of clothes from the washer to the dryer.

In addition to waste generated from operational procedures, other releases came from waste by-products created by the filtering and distillation processes necessary for re-use of solvent in the drycleaning plant. These wastes contain small amounts of solvent and are now collected by hazardous waste disposal companies. Before the disposal companies began operating in the late 1980's, the wastes were commonly discarded directly onto the ground, into the sewer system, or into leaky dumpsters. Also, since older drycleaning machines vent solvent vapors to the outside, solvents would condense in cool weather and collect on nearby exposed soil.

Since the solvents do not break down quickly in the environment, small releases can eventually accumulate into a significant source of contamination under the drycleaning plant. Solvent trapped in the soil beneath a drycleaning facility can be a continuing source of groundwater and soil contamination for many years. As a result, a drycleaning plant may be an ongoing source of contamination long after it has stopped operating or has implemented containment measures to prevent further releases.

Since the Fund has limited revenue, it cannot address the environmental problems at every participating site. To protect human health and the environment prudently, SCDHEC set priorities to ensure that the sites that present the most significant health impacts are addressed first and that there is enough money in the Fund to continue the work at those sites into the future. A priority list (further details in Section 5) was created by SCDHEC staff based on health impacts from detailed information gathered on each participating drycleaning site.

One of the most positive program outcomes is the enhancement of environmentally sustainable business practices by participating drycleaners. The Act requires participating drycleaning operators to certify to SCDHEC that they are handling their drycleaning solvents in an environmentally responsible manner. As a result, drycleaners participating in the Fund have maintained or implemented containment measures that do not allow solvents to be released to the soil or groundwater. While this will not remove contamination that has already been released into the environment, these measures will greatly reduce the probability of future releases therefore lessening the impact that the drycleaning solvents have on the environment.

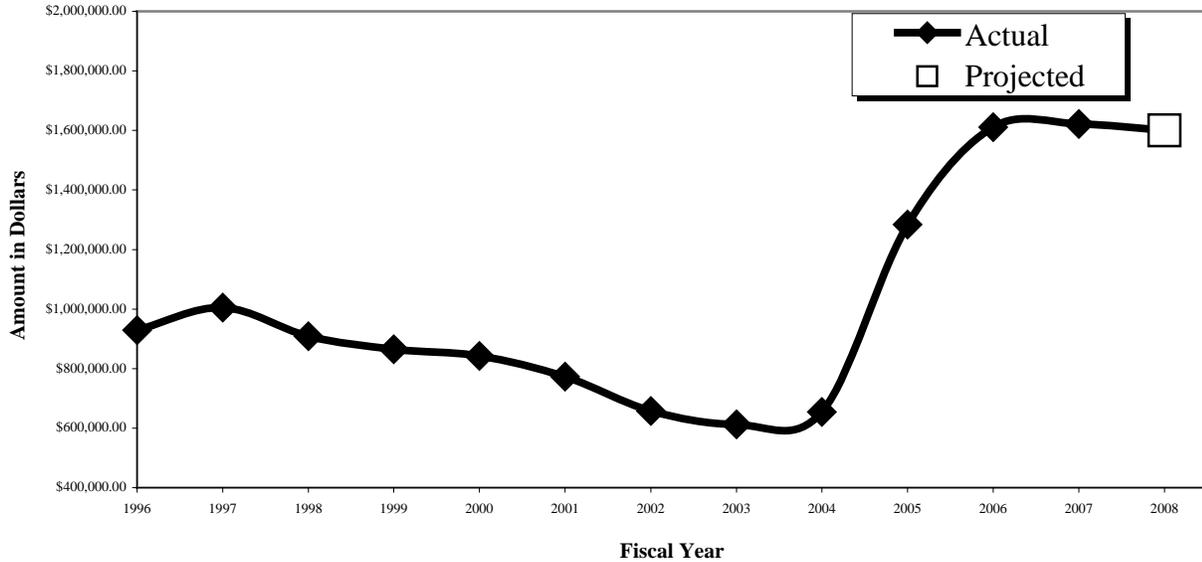
## **2. Fund Status and Five-Year Funding Projection**

### ***Funding Source***

The South Carolina Department of Health and Environmental Control (SCDHEC) is responsible for administering the South Carolina Drycleaning Restoration Trust Fund (the Fund). The South Carolina Department of Revenue (DOR) is responsible for drycleaner registration and collection of money into the Fund.

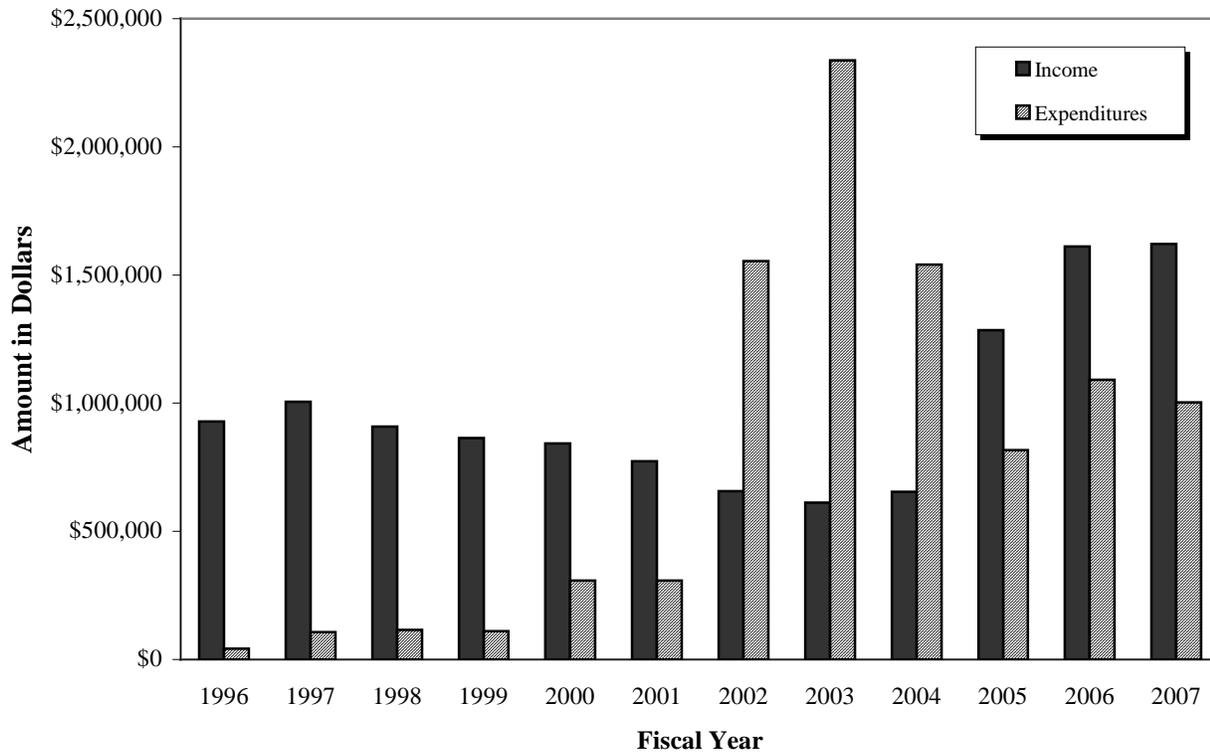
Revenue for the Fund has historically been derived from two sources: 1) Annual registration fees; and 2) A surcharge is assessed on every gallon of drycleaning solvent purchased for use in the state. The annual fees are based on a sliding scale that depends on the number of employees at each drycleaning business. These surcharges and fees are not collected from non-participating drycleaners.

As a result of declining revenues to the Fund (Figure 1), a legislative change enacted in May 2004 added a 1% sales tax on drycleaning as a third source of revenue. Imposition of the 1% tax began on July 1, 2004 (Fiscal Year 2005, FY05). With the addition of the 1% tax, revenue into the Fund increased from \$655,000 in FY04, to \$1,284,000 in FY05, to \$1,610,701 in FY06, and to \$1,621,127 in FY07.



**Figure 1: Drycleaning Restoration Trust Fund Yearly Income**

The total income into the Fund through July 1, 2007 is \$11,763,306 and total expenditures through July 1, 2007 have been \$9,109,972 (Figure 2). As of December 31, 2007, all but \$283,900 has been committed to current projects.



**Figure 2: Comparison of Income versus Expenditures**

### ***Funding Needs***

There are 272 drycleaning plants that have registered into the Fund as of July 1, 2006. Not all of these plants are still operating. In addition, there are 182 former drycleaning plants that stopped operating prior to 1995 (when the original legislation was enacted) that are also eligible for the Fund. Altogether, there are 454 known drycleaning sites where funds may be spent. As of November 27, 2006 only owners and/or operators of new drycleaning facilities may apply for eligibility to the Fund; therefore, no additional old drycleaning sites that may be discovered are being added to the Fund's liability. As noted earlier, petroleum users were allowed to withdraw from Fund eligibility in 1995. Otherwise, they were required to register with the Department of Revenue and pay into the Fund.

Based on experience, SCDHEC staff estimate that \$147 million will be required to assess and clean up eligible sites. This amount may be considerably under-estimated because it does not consider new sites and it is based on assumptions that future assessments and remedial actions will not require the level of funding expended thus far and has not been adjusted for inflation. This figure includes estimates of \$59 million for assessment costs and \$88 million for remediation costs (which includes long-term operations and maintenance costs). More details about these projections are outlined below.

### ***Assessment Costs***

Assessment costs are incurred during activities to delineate the nature and extent of contamination. A large portion of the assessment costs at drycleaning plants is due to the expense of investigating groundwater contamination. To date completed assessments costs range from \$51,000 to \$477,000. The average cost of assessing each site is \$182,000. It is anticipated that the average cost will drop at least 10% due to increased efficiencies of the program as experience is gained with more sites. It is also assumed that some lower priority sites will be less expensive to evaluate because it is probable that the contamination will be less extensive than has been found at the higher priority sites.

Assuming the average assessment cost can be decreased to \$161,000, it will require at least \$59 million for assessment costs to investigate the remaining known sites.

### ***Remediation Costs***

Once the sites are investigated, they usually require remediation in order to meet the regulatory standards. Of the 90 sites investigated to date, approximately 75% will require comprehensive remediation. Those that do not need remediation will need long term monitoring to verify that the risk remains below the levels of concern. It is likely that less than 5% of all sites investigated will not need any follow-up expenditure for either remediation or long-term monitoring.

To date, SCDHEC has spent \$3,241,623 on the various remedial activities at 10 drycleaning sites. The average remediation cost to date is \$324,162. This includes system design, installation, operation and maintenance. However, the 5 sites that have had ozone systems, potassium permanganate injection and air sparging with a soil vapor extraction system, average \$515,454.75. These average costs will increase as those sites currently in remediation proceed toward closure.

To estimate liability, SCDHEC staff has projected that 75% of the known sites will need remediation. Due to a lower priority the average cost of remediation of some of the sites can be reduced 30%. All sites, post remediation and those that do not require remediation, will incur long

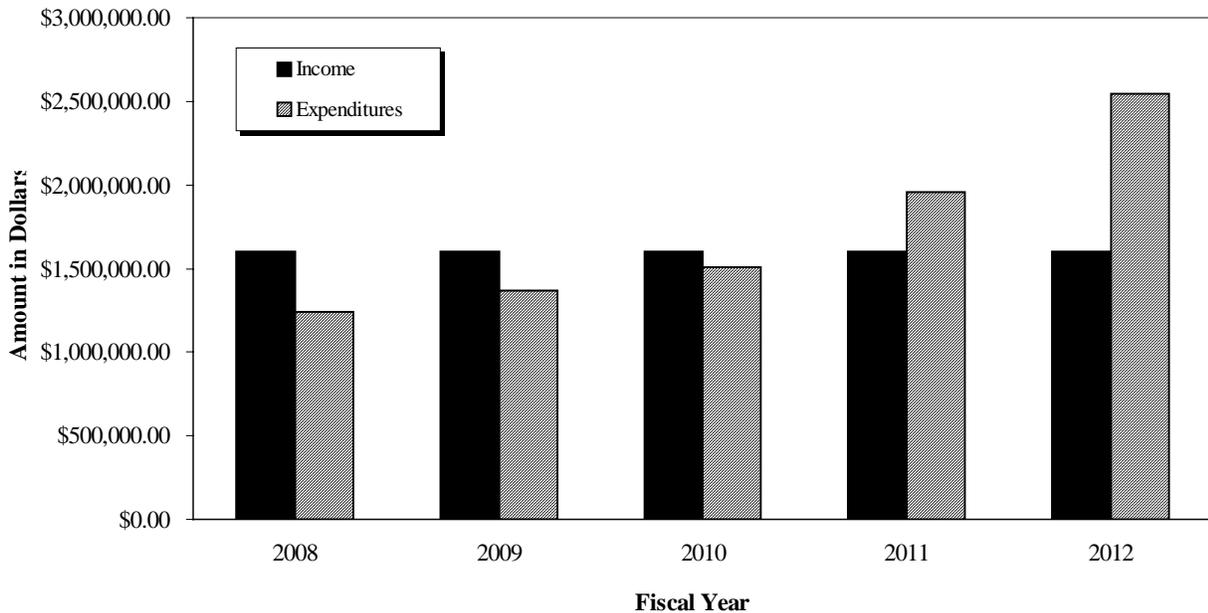
term monitoring costs. Based on these assumptions, \$88 million will be needed for remediation costs over the lifetime of the Fund.

**Five-Year Funding Projection**

As of December 1, 2007, SCDHEC has commitments for assessment and remediation totaling \$1,524,081.78, leaving an uncommitted balance of \$283,929.68.

In order to complete the funding projection, the income into the Fund was estimated over the next five fiscal years. The historical trend shows income declining steadily from a high in 1997 until the sales tax was implemented (Figure 1). Using trend analysis, the projected income to the Fund will remain steady over the next five years at a level of \$1,600,000 in FY12 (Table 1). It appears that after the initial few years following the implementation of the 1% tax that the income to the fund is stabilizing and the decreasing trend is not being realized.

Table 1 and Figure 3 include a five-year projection of expenditures. This projection indicates that expenditures in years 2008 through 2011 will exceed the income into the Fund. However, since there is no excess money in the fund, the program will only be able to spend what is available. Projects will have to be prioritized for remedial activities just like they were for assessment.



**Figure 3: Five Year Projection Comparison of Income versus Expenditures**

<b>Fiscal Year</b>	<b>Income</b>	<b>Expenditures</b>
1996	\$928,545.65	\$42,582.84
1997	\$1,005,142.60	\$106,383.46
1998	\$908,516.14	\$115,929.62
1999	\$864,553.81	\$111,067.06
2000	\$842,913.75	\$308,156.47
2001	\$773,511.14	\$308,078.22
2002	\$657,242.36	\$1,553,734.08
2003	\$612,189.97	\$2,337,642.77
2004	\$654,508.34	\$1,540,095.94
2005	\$1,284,353.96	\$816,404.12
2006	\$1,610,701.00	\$1,090,890.57
2007	\$1,621,127.21	\$699,422.25
<i>2008</i>	<i>\$1,600,000.00</i>	<i>\$1,240,000.00</i>
<i>2009</i>	<i>\$1,600,000.00</i>	<i>\$1,369,500.00</i>
<i>2010</i>	<i>\$1,600,000.00</i>	<i>\$1,506,450.00</i>
<i>2011</i>	<i>\$1,600,000.00</i>	<i>\$1,958,385.00</i>
<i>2012</i>	<i>\$1,600,000.00</i>	<i>\$2,545,901.00</i>

**Table 1: Income and expenditures for the Fund, 1996-2007.  
Data for 2008-2012 (in *italics*) are projected.**

### **3. Public Participation in the Drycleaning Program**

One of SCDHEC’s goals for the Drycleaning Restoration Trust Fund Program is to encourage public participation in the remedy selection process. Community involvement in the program is important for several reasons. Primarily, it gives local residents an opportunity to have input into choosing a remedial strategy and allows them to address any concerns that they may have about the site. People living near a site may be aware of conditions that could influence the effectiveness of the available remedies. On several occasions, sharing of such important information has substantially aided SCDHEC’s understanding of the site and has steered the remedy choice.

Once appropriate analytical information has been collected on a drycleaning site, SCDHEC assigns a contractor to review the various technologies that may be effective for remediation. A Feasibility Study (FS) from the contractor provides an in-depth evaluation of the site characteristics and information on the remedies that can be used. SCDHEC, along with their contractor, eliminates some remedies early in the process as impractical for the site. The contractor develops other remedies further with detailed information on implementation strategies and cost estimates. While the FS will usually point to one or two remedies as clear-cut choices, public input is sought before final selection of a remedy.

SCDHEC distributes information about the site and its upcoming remediation to the public via a legal notice in the local newspaper and letters to area residents, local government officials, and locally elected members of the S.C. General Assembly. SCDHEC schedules a public meeting at a location near the drycleaning site, and SCDHEC advertises the time and place as a legal notice and sends individual letters to those in the vicinity of the site in question. At the meeting, a SCDHEC spokesperson presents an overview of site conditions and explains the potential remedies that have been considered. An open forum with a question-and-answer session follows this presentation. A court reporter compiles an official transcript of the meeting, and people are encouraged to call the program’s toll-free telephone number (1-866-343-2379) if they have further questions.

#### **4. Expanded Initial Assessments (EIA)**

##### **Risk Management Approach for SCDHEC Drycleaner Remediation Program**

In an effort to assess and prioritize the known sites for health risk and remediation, SCDHEC and a contractor set up a new approach to identify potential exposure pathways at each of the 400+ sites. Essentially it means that with field staff capable of making approach decisions, a contractor to handle the sampling and coordinating the laboratory data, an in-house geoprobe (to avoid scheduling conflicts) and a field screening method that gives quantitative results almost instantly, a site could be evaluated and prioritized. Once all potential exposure pathways were identified at each site, the risk was then managed in such a way as to reduce or eliminate potential human health exposure.

SCDHEC staff sought necessary training and certification to directly operate the systems employed by the EIA approach. By using this approach on ten test sites, direct groundwater exposure impacts were found at four of the facilities. Most of these direct impacts involved private or public drinking water systems, which 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.



**Direct-push (DP) methods have allowed contractors to rapidly delineate plumes on most sites. This technology requires use of a small drill rig that pushes and hammers a metal pipe into the ground. Soil and groundwater samples are acquired by DP technology for rapid screening in the field and eventual laboratory analysis. Unlike groundwater monitoring wells, which are installed and can be re-sampled many times, DP wells are designed to be temporary and inexpensive and are usually abandoned the same day they are drilled.**

A key aspect of this 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.

As of the end of December SCDHEC has evaluated 60 sites. The goal is to complete the exposure pathway assessments by 2010 while continuing full-scale assessment and remediation at the highest priority sites as funding allows.

## **5. Prioritization**

### ***Scoring***

Drycleaners that have registered with DOR are not eligible for the Fund until a completed eligibility application is submitted to SCDHEC. The eligibility application documents such information as which solvent(s) is used at the site, how long the drycleaner has been in operation, and how the waste products from the cleaning process are disposed. The applicant (usually the drycleaning business owner or land owner) certifies in the application that the drycleaning plant meets all of the eligibility criteria specified in the law. SCDHEC assigns a priority ranking to the site using information provided in the eligibility application.

The priority rank is determined by a scoring system that emphasizes potential threats to human health that can occur from drycleaning solvent contamination. The scoring system makes assumptions about the potential human exposures to contamination from a site. One common assumption used in scoring the sites is that nearby residents use private wells as their source of drinking water if public water lines do not serve the area. Other assumptions are based on site-specific information about the age of the plant, the types of solvents used, regional geology, and surrounding land use. Unless a particular exposure pathway from the site is known to be nonexistent, it is assumed that a potential threat is present via that mechanism. In late 2006, the EIA procedure discussed in the previous section of this report was implemented to gather information to replace the assumptions and get a “real” idea as to the extent of the health and environmental effects at each site.

### ***Tier Assignment***

The Tier Ranking System consisting of 5 levels of prioritization was designed to flag a site for further investigation/remediation and its priority in comparison to the other drycleaning sites. After an EIA is conducted, a site is assigned a Tier value ranging from Tier I – A, B, and C (most urgent), to Tier N (No further action). Most of the drycleaning sites that have been assessed are ranked in the beginning at a Tier IIB level, meaning that they have contamination and need to be further investigated with an EIA. If, after the EIA, it is determined that there is an imminent health risk then the site is moved up to the Tier I rankings and the health risk is dealt with accordingly. For example, if there are impacted private drinking water wells, then the residence is provided with bottled water for consumption until an alternate source of drinking water is established. After the impacted drinking water situation is addressed, then the site is re-ranked for remediation and is usually moved down to the Tier III level, reflecting that there is contamination present at the site but there are no imminent health risks.

## **6. List of Acronyms**

Act	South Carolina Drycleaning Restoration Trust Fund Act of 2004
DCE	Dichloroethylene
DOR	South Carolina Department of Revenue
DP	Direct-Push
FS	Feasibility Study
Fund	South Carolina Drycleaning Restoration Trust Fund
FY	Fiscal Year
MW	Monitoring Well
PCE	Perchloroethylene (tetrachloroethylene), or “perc”
ppb	parts per billion
ROD	Record of Decision
SCDHEC	South Carolina Department of Health and Environmental Control
TCE	Trichloroethylene
UST	Underground Storage Tank
VC	Vinyl Chloride

## **7. Web Links**

- [www.scdhec.gov/eqc/lwm/forms/dryclean\\_guide.pdf](http://www.scdhec.gov/eqc/lwm/forms/dryclean_guide.pdf)
- [www.scstatehouse.net/regs/2071.doc](http://www.scstatehouse.net/regs/2071.doc)
- [www.scstatehouse.net/sess115\\_2003-2004/bills/487.doc](http://www.scstatehouse.net/sess115_2003-2004/bills/487.doc)
- [www.scdhec.gov/eqc/lwm/forms/funding.pdf](http://www.scdhec.gov/eqc/lwm/forms/funding.pdf)
- [www.scdhec.gov/eqc/admin/html/eqforms.html#Dry](http://www.scdhec.gov/eqc/admin/html/eqforms.html#Dry)
- [www.scdhec.gov/eqc/lwm/forms/drycleaningcontractors.pdf](http://www.scdhec.gov/eqc/lwm/forms/drycleaningcontractors.pdf)
- [www.scdhec.gov/eqc/lwm/forms/drycleaningrank.pdf](http://www.scdhec.gov/eqc/lwm/forms/drycleaningrank.pdf)
- [www.scdhec.gov/eqc/lwm/dryclean/scrd.ppt](http://www.scdhec.gov/eqc/lwm/dryclean/scrd.ppt)
- [www.drycleancoalition.org](http://www.drycleancoalition.org)