

Drycleaning Solvent Contamination in Florida

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Abstract: In 1994, the Florida Legislature created the Drycleaning Solvent Cleanup Program (DSCP) to provide funding to identify and rehabilitate sites and drinking water supplies contaminated by drycleaning solvents – the first such program in the nation. The DSCP was open for voluntary joint application by drycleaning and wholesale supply facility owners, operators, and real property owners from March 1996 through December 1998. Over 1400 sites have been made eligible for the DSCP. The DSCP is administered by the Bureau of Waste Cleanup within the Florida Department of Environmental Protection (FDEP). Drycleaning site assessment field work utilizing direct push technology and mobile laboratories for rapid site assessments began in early 1997. To date, assessments have been completed at over 180 sites. Data has been collected from 150 drycleaning sites representing approximately 10% of the eligible facilities. The data provide a “snap shot” of drycleaning solvent contamination in Florida, including operational, regulatory, and hydrogeological data as well as information on contaminant source areas and contaminant occurrence, distribution, and degradation. This information has particular relevance to those involved in drycleaning site assessment activities and to states considering the development of drycleaning solvent cleanup programs.

In 1994, the Florida Legislature enacted the Drycleaning Contamination Cleanup Act (Chapter 376, Florida Statutes) to provide a source of funding for rehabilitating sites and drinking water supplies contaminated by drycleaning solvents. The legislation, sponsored by the drycleaning industry, provides for the cleanup of active and abandoned drycleaning sites and drycleaning wholesale supply facilities in order to address the environmental liability issues resulting from drycleaning solvent contamination. The DSCP limits the liability of the owner, operator, and real property owner of drycleaning and wholesale supply facilities for the costs of cleanup of drycleaning solvent contamination. Applications to the DSCP were accepted from March 1996 through December 31, 1998. A total of 1,564 facilities applied to the program and, to date, 1,416 facilities have been made eligible. The FDEP Bureau of Waste Cleanup administers the DSCP. Ten private contractors conduct site assessment and remediation activities under direct contract with FDEP.

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The program is funded by a 2% tax on gross receipts of businesses engaged in drycleaning and laundering; a \$5 per gallon tax on perchloroethylene drycleaning solvent; a \$100 annual registration fee and a one time deductible fee (\$1000, \$5000, or \$10,000) based on the date of application to the program. Annual revenue raised from these sources is approximately \$8 million.

This paper presents data compiled from program applications and the site assessments for 150 sites addressed through the DSCP:

Typical drycleaning facilities are located in urban and suburban areas in settings best described as retail-commercial/residential and most are located within one block of a residential area. Approximately 77% (116) of the facilities are located in shopping centers or strip malls, 21% (31) are freestanding buildings, and at 2% (3) of the sites the buildings have been razed.

Of the 150 sites evaluated: 146 were conventional drycleaning operations, 2 former coin-operated laundromats, and 2 former drycleaning wholesale supply facilities. Approximately 69% of the conventional drycleaning sites were active drycleaning operations at the time site assessment work was being conducted. The facility operator was the real property owner at only 19 of the 101 active drycleaning sites in the study. This figure correlates closely with the percentage of sites housed in freestanding buildings.

The reported operational periods for the facilities, at the time of site assessment work, ranged from 3 to 74 years. The average operation periods for active and inactive facilities are 19.3 years and 15 years, respectively. Often the current facility owner/operator and real property owner had little knowledge of past operations; therefore, actual operating periods may be longer.

At the time site assessment work was conducted, two types of drycleaning solvents were being utilized by drycleaners: perchloroethylene (PCE) and petroleum drycleaning solvents. PCE was used at 87% of the facilities with petroleum solvent and combinations of PCE/petroleum solvent used at 9% and 4% of the facilities, respectively. Approximately 2% of the sites had historically used PCE and Valclene (a.k.a. Freon 113 or 1,1,2-trichloro-1,2,2-trifluoroethane) drycleaning solvents. Most of the active drycleaning facilities (85%) also performed conventional laundering operations onsite and most operators pre-spotted some laundry.

Twenty-two (15%) of the 101 applications for the active facilities in this study provided information on discharges that had occurred at their facilities. Most of these discharges fell into four categories: leaking machine valves, gaskets and piping; machine maintenance; distillation unit operation; and solvent delivery, transfer and storage.

Prior to the promulgation of the Resource Conservation Recovery Act on November 21, 1980, hazardous wastes generated by drycleaning operations were virtually unregulated. Historically, common drycleaning waste disposal practices included discharge to the ground or sanitary sewer and disposal into trash receptacles.

Hazardous waste haulers did not begin servicing drycleaning operations until the mid-1980s. Approximately 65% (97) of all facilities (active and inactive) began operations prior to the availability of proper offsite disposal alternatives.

A review of enforcement/compliance records for the 150 sites showed that compliance inspections had been performed at approximately 53% (79) of the sites prior to application to the program.

Contamination assessment activities began in early 1997 with the following program objectives: minimize the number of mobilizations; minimize the amount of investigation-derived wastes; develop and maintain good communications between contractors, project managers, business owners and real property owners; and streamline data collection and reporting. These objectives were met, in part, through the utilization of direct-push technology coupled with on-site analysis of samples in mobile laboratories and scope adjustments in the field based upon real-time data collection and analyses.

Site assessment activities conducted through the DSCP have indicated that the primary contaminant source areas identified at drycleaning facilities are in the immediate vicinity of the drycleaning machine and/or still (>100 identified source areas) and the area just outside the rear door of the facilities (~50 identified source areas). Other identified source areas include storm sewers, above- and underground storage tanks, septic tanks/drainfields, and sanitary sewers.

Groundwater contamination investigations indicate that drycleaning solvent contamination is present at 97% of the assessed sites. Groundwater cleanup target levels are exceeded at 91% of the assessed sites. Groundwater contamination has migrated beyond property boundaries at 57% of the sites with off-property exceedances of groundwater cleanup target levels at 43% of the sites.

Based on groundwater PCE equivalent concentrations exceeding 10% of PCE aqueous solubility, dense non-aqueous phase liquid PCE is likely present in groundwater at approximately 20% of the sites.

Groundwater contaminant plumes are generally less than one acre in size (63% of sites). Twenty-eight percent of the sites have contaminant plumes of one to five acres and 9% of the sites have contaminant plumes greater than 5 acres. The largest plume identified is approximately 44 acres.

In terms of mass, PCE is the most common contaminant found in groundwater (72% of total contaminant mass); followed by cis-1,2-dichloroethylene (15.8 %); trichloroethylene (9.8%); and vinyl chloride (2%).

To date, contamination assessments have been completed at 186 sites. Assessment work is ongoing at 19 sites. The distribution of remedial approaches are as follows: 12% No Further Action; 33% Natural Attenuation with Monitoring; 55% Active Remedial Systems.