Dry Cleaner Status Report

February 9, 2011

This staff report discusses the emerging significant threat of tetrachloroethene (PCE) releases from dry cleaning facilities to groundwater, the challenges our cleanup program faces in addressing dry cleaner pollution cases, and recent efforts to enhance regulatory oversight of dry cleaner spills and releases.

Background

The commercial dry cleaning industry began in the late 1800s and early 1900s. The first dry cleaning solvent used was gasoline. It was later replaced by other petroleum distillates such as naptha, kerosene and benzene. In the 1920s, stoddard solvent began to be used. In the 1940s, the chlorinated solvent PCE began to be used, and it became the main dry cleaning solvent used by the 1960s. There are about 36,000 active dry cleaning facilities in the United States and 85% to 90% of them use PCE. In 1991, the California Air Resources Board estimated that there were 4,800 dry cleaning facilities in California and that they used over a million gallons of PCE per year.

PCE use by California dry cleaners has declined in recent years and is expected to dramatically decline in the future. Newer generation dry cleaning machines use less PCE per pound of clothing cleaned. In the last ten years, several alternative, less toxic dry-cleaning solvents have been introduced. Recent State legislation and regulation will cause dry cleaners to phase out the use of PCE. A 2004 State law (AB 998, Lowenthal), imposes an annually-increasing PCE tax that will eventually exceed the cost of a gallon of PCE. In 2006, the California Air Resources Board passed a regulation to phase out the use of PCE by 2023.

Emerging Threat to Groundwater and Human Health

PCE spilled or released by dry cleaners poses a significant threat to groundwater and human health in our region. PCE is a highly toxic chlorinated solvent and is classified as a probable carcinogen. Its drinking water standard is 5 micrograms per liter, and the Public Health Goal for PCE is 0.06 micrograms per liter. PCE is heavier than water and tends to be highly mobile when it reaches groundwater. PCE is one of the four most commonly detected pollutants in California water supply wells. Los Angeles County has approximately 250 PCE-contaminated water supply wells, far more than most other counties. PCE exceeds the safe drinking water level in 480 water supply wells in California – at least one well in 29 of 58 counties.

In the Bay Area, the deeper aquifers that are used as active drinking water supplies are separated in most areas from the shallowest aquifers by a sequence of thick clay layers known as the regional aquitard. This aquitard has generally protected the deeper drinking water aquifer. In 2007, the Santa Clara Valley Water District released its *Study of Potential for Groundwater Contamination from Past Dry Cleaner Operations, Santa Clara County* (Dry Cleaner Study). The Dry Cleaner Study found that deep drinking water wells in Santa Clara County are potentially

vulnerable to historic releases of PCE from dry cleaners. Between 1986 and 2003, 3.3% of all County public water supply wells that were tested (17 of 520) had some detectable level of PCE. While wells showing PCE pollution are normally closed or taken out of service, this limits the use of our local groundwater resources.

PCE Migration Through Soil and Groundwater

Dry cleaners may discharge PCE to soil and groundwater through a variety of mechanisms including dry cleaning equipment leakage or improper operation and maintenance, solvent transfer and storage, and discharge to sanitary sewers or storm sewers. Dry cleaners today have greatly improved their handling of solvents, but older operations, especially prior to 1990, were more likely to have poor solvent handling and disposal practices.

Once PCE is discharged to soil from a dry cleaner facility, it migrates vertically downward towards groundwater and further down into lower water-bearing zones. As PCE migrates through soil and saturated water-bearing sediments, it often becomes bound to clay or silt and then slowly dissolves into groundwater for decades. PCE may also migrate through soil as a "free product" in small pools or discrete blobs. PCE "free product" is difficult to locate and characterize because of the way it follows preferential pathways through soil. Once PCE becomes dissolved in groundwater, it may migrate rapidly downgradient depending on local groundwater flow velocities.

Sanitary sewers and storm drains may also contribute to PCE migration either by providing a preferential pathway through pipeline backfill or by exfiltration of PCE-containing wastewater.

Vapor Intrusion is a Concern at Dry Cleaner Sites

PCE is a volatile organic compound so it may also migrate as a vapor. After PCE is released to soil, a portion of it vaporizes to form a soil gas plume around the source area and above any groundwater pollution plume. Vapors may then migrate up through soil, move through cracks in the floor or through plumbing conduits, and into buildings. This is known as the vapor intrusion pathway. Investigation of the vapor intrusion pathway is now standard practice for most dry cleaner pollution investigations. It is not unusual for these investigations to find evidence of vapor intrusion, necessitating mitigation measures to protect building occupants**.**

Responsible Parties are Difficult to Locate

It is frequently difficult to identify responsible parties for dry cleaner pollution because of the transient nature of dry cleaner ownership. The Dry Cleaner Study found that dry cleaning businesses tend to change hands and move fairly often. The Dry Cleaner Study found that individual dry cleaning businesses, identified by unique names, had moved as many as four times in 43 years. In Santa Clara County, continuous dry cleaning operations in a single location have been operated by as many as five different business owners, judging by name changes. All this movement in locations and business owners and operators makes it difficult to locate viable responsible parties for pollution investigation and cleanup. The Dry Cleaner Study found that there were approximately 1,250 dry cleaning businesses that operated in Santa Clara County from

1946 to 2001, and, as of 2002, there were 224 unique active dry cleaning businesses in Santa Clara County.

Existing Funding Programs are Inadequate to Address Dry Cleaners

Our Site Cleanup Program operates under the "polluter pays" model where the party responsible for the discharge pays for the pollution investigation and cleanup, and for our staff oversight costs. The "polluter pays" model breaks down for many dry cleaner pollution cases because the dry cleaner business cannot afford to perform the pollution investigation or cleanup or reimburse our oversight costs.

Cost Recovery Program

Property transfers, refinancing, or redevelopment are the most common triggering events that lead to our oversight of a new dry cleaner pollution case. Banks require an investigation of a commercial property before a loan is made, and, if soil and groundwater pollution is discovered, the property owner usually applies for agency oversight and enrolls in our cost recovery program.

If a dry cleaner cleanup is the responsibility of a larger property owner or insurance company, then these types of responsible parties usually can afford to pay for investigation, cleanup, and our oversight costs. As part of the Site Cleanup Program, responsible parties enroll in our cost recovery program, and we bill staff cost for oversight of that site's investigation and cleanup back to the responsible party. However, many dry cleaners are operated by "Mom and Pop" owners who cannot afford to pay the full investigation, cleanup, or our oversight costs over time. We are encountering more of these "Mom and Pop" dry cleaners.

If a responsible party is unable or unwilling to enroll in our cost recovery program, then we have few resources to work on the case. The Dry Cleaner Study identified 1,250 dry cleaner businesses that operated in Santa Clara County alone between 1946 and 2001, including 78 dry cleaner locations that pose a significant threat to groundwater quality. We have not been able to work on the vast majority of these high priority locations due to the lack of funding.

Within our Site Cleanup Program, we currently oversee about 50 dry cleaners pollution cases, most of which are enrolled in our cost recovery program. In the past 10 years, we have closed relatively few dry cleaner pollution cases because of the unusually difficult nature of PCE pollution discussed above.

State Dry Cleaner Funds

Thirteen states have developed dry cleaner funds that educate facility operators on best management practices, provide technical assistance, and fund investigation and cleanup of releases from dry cleaners. The funds are provided through some variation of an annual fee on active dry cleaners and wholesale PCE distributors. However, the funding provided by these programs is far less than the necessary funding to clean up most dry cleaner sites in their respective states. There have been two attempts to establish a dry cleaner fund in California in the last ten years, but both

attempts failed. We will support future attempts to create a workable and financially sound fund in California.

Recent Efforts to Enhance Regulatory Oversight of Dry Cleaners

Because of the concerns about the groundwater and human health impacts from dry cleaner spills and the limited resources to address them, staff at the State and Regional Water Boards and our sister agency, the Department of Toxic Substances Control (DTSC), have formed a statewide Dry Cleaner Workgroup to address dry cleaner contamination. The Workgroup is made up of staff from both agencies. So far, the Workgroup has provided four internal workshops to share information and provide trainings on strategies to address dry cleaner pollution cases. The workshops have included four topics:

- *Regional Dry Cleaner Studies:* The North Coast and Los Angeles State and Regional Water Boards, the Santa Clara Valley Water District, and DTSC have presented results of their dry cleaner and PCE studies. These studies can help identify potential dry cleaner pollution cases in critical groundwater basins but would be impractical to carry out statewide.
- *Finding Responsible Parties (RPs):* Tools to find RPs include old telephone books, mailed questionnaires, the Secretary of State's website, county recorder offices, internet searches, and city records. This is a time-intensive task that normally can focus only on high-threat dry cleaner locations.
- *Finding the Money:* Funding sources for pollution investigations and cleanups include RPs, albeit relatively limited as described above, insurance policies when available, limited government grants, and dry cleaner funds in some states other than California.
- *Innovative Site Investigation and Remediation Technologies:* Several newer technologies have become available to improve investigation and cleanup efficiency and include high resolution investigation technology and enhanced bioremediation.

The Workgroup is currently developing a more comprehensive list of strategies for funding dry cleaner pollution investigation and cleanup.

There is also a nationwide State Coalition for the Remediation of Dry Cleaners where states with dry cleaner funds - and a few other states such as California and New York - share information and sponsor trainings. We participate in any trainings when they are held in Northern California.

Conclusion

PCE spills and releases from dry cleaning operations pose a significant threat to human health and our drinking water supplies and are becoming a larger part of our Site Cleanup Program. However, current programs and funding are inadequate to address this threat. Without more secure funding sources, such as a statewide fund, the significance of this threat will increase. Unfortunately, this means PCE will continue to pollute the State's water supply wells as increasing population exerts more pressure on our groundwater resources. We will keep the Regional Water Board informed of the progress we make in addressing this threat.