

Health Consultation

FORMER GREEN HILLS CLEANERS
NASHVILLE, DAVIDSON COUNTY, TENNESSEE

STATE OF TENNESSEE DCERP SITE #D-19-200

SEPTEMBER 8, 2008

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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NASHVILLE, DAVIDSON COUNTY, TENNESSEE

STATE OF TENNESSEE CDERP SITE #D-19-200

Prepared By:

Tennessee Department of Health
Under cooperative agreement with the
The Agency for Toxic Substances and Disease Registry

Foreword

This document summarizes an environmental public health investigation performed by Environmental Epidemiology of the State of Tennessee Department of Health. Our work is conducted under a Cooperative Agreement with the federal Agency for Toxic Substances and Disease Registry. In order for the Health Department to answer an environmental public health question, several actions are performed:

Evaluate Exposure: Tennessee health assessors begin by reviewing available information about environmental conditions at a site. We interpret environmental data, review site reports, and talk with environmental officials. Usually, we do not collect our own environmental sampling data. We rely on information provided by the Tennessee Department of Environment and Conservation, U.S. Environmental Protection Agency, and other government agencies, businesses, or the general public. We work to understand how much contamination may be present, where it is located on a site, and how people might be exposed to it. We look for evidence that people may have been exposed to, are being exposed to, or in the future could be exposed to harmful substances.

Evaluate Health Effects: If people could be exposed to contamination, then health assessors take steps to determine if it could be harmful to human health. We base our health conclusions on exposure pathways, risk assessment, toxicology, cleanup actions, and the scientific literature. *Make Recommendations:* Based on our conclusions, we will recommend that any potential health hazard posed by a site be reduced or eliminated to aid in mitigation of possible harmful health effects. The role of Environmental Epidemiology in dealing with hazardous waste sites is to be an advisor. Often, our recommendations will be actions items for other agencies. However, if there is an urgent public health hazard, the Tennessee Department of Health can issue a public health advisory warning people of the danger, and will work with other agencies to resolve the problem.

If you have questions or comments about this report, we encourage you to contact us.

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Introduction

DCERP Facility ID No. D-19-200 (Figure 1) is a former dry cleaning site located at 4106 B Hillsboro Pike in Nashville, Davidson County, Tennessee, 37215. The facility is a triangular lease space at the southwestern end of a strip shopping center at 4106 Hillsboro Pike (Figure 2). The drycleaners, Green Hill Cleaners, moved in 2006 to a different lease space at the same address. The drycleaners continues to provide cleaning services although the new lease space is a pick-up location only. All references to the “Site” refer to the former Green Hills Cleaners location at 4106 B Hillsboro Pike.

The Tennessee Department of Health (TDH), Environmental Epidemiology Program (EEP) was contacted on May 5, 2008, by the Tennessee Department of Environment and Conservation (TDEC) Drycleaner Environmental Response Program (DCERP) to evaluate the results of indoor air sampling conducted within the former cleaner’s lease space. As part of their continued commitment to maintaining former drycleaner sites for safe new uses, the TDEC DCERP recommended indoor air sampling as a component of the Prioritization Investigation – Task Group B (PIB) activities conducted at the site (2008).

Background

A Site visit was performed on May 6, 2008, by personnel from the TDH EEP. The characteristics of the former cleaner’s property were noted as well as photographs taken which are included in this report.

The former Green Hills Cleaners (the Site) is located at the southwestern end of a strip mall shopping center which includes a furniture and interiors store at the northeastern end (Figure 3). An art gallery, a children’s shop, a suite of offices, a night club, a hair salon (Figure 4), and an unknown basement area beneath the gallery and children’s shop, and the new location of the cleaners fill the remaining strip mall spaces. Some of the offices in the suite occupy a basement area. The basement area beneath the gallery is used for shipping/receiving and has an office which is occupied throughout the day. The children’s shop has a basement space which is utilized only for storage. A lawn mower sales and service shop is located behind the former cleaner’s lease space in a stand-alone building. A convenience store/gas station was formerly located south of the former cleaners. The former convenience store/gas station parcel has been recently redeveloped and is currently a mobile phone sales and service store (Figure 5).

The Site was investigated for contamination from its past use as a solvent-based drycleaner by TVG Environmental Inc. (TVG) of Nashville, Tennessee. A Phase II Environmental Site Assessment (ESA) conducted at the Site in August 2007, determined that site soils contained the drycleaner chemical tetrachloroethylene (PCE), drycleaner chemical breakdown products, and compounds related to gasoline. In addition, significant levels of PCE were found in groundwater through sampling of a well installed during the Phase II ESA beneath the former location of the drycleaning machines inside the former cleaner. Because PCE was detected in both soil and groundwater, the Site was enrolled in the DCERP. A Combined Facility Inspection (FI) and Prioritization Investigation – Task Group A (PIA) was performed by TVG, with an FI/PIA report submitted to DCERP on November 12, 2007.

The approximate 1,180 square foot former lease space of the cleaners was rehabilitated in late 1995 and the cleaners had been in operation in its former location since that time. According to Site reports, the cleaners relocated from its former space in 2006 when the on-site cleaning operation ceased. The cleaners moved to the adjacent lease space within the same shopping center and became a pick-up location only. All drycleaning is now performed off-site. The drycleaning equipment and other facility items have been removed from the former lease space and the space is currently vacant. According to TVG, the former cleaner's space is scheduled to be reused as an unidentified commercial business in the near future.

DCERP allowed further investigation of the site by TVG in the form of a Prioritization Investigation – Task Group B (PIB). TVG submitted the PIB report to DCERP on April 1, 2008. The TVG PIB report further identified site soils in the northwestern, southwestern, southern, and eastern portions of the Site to have low levels of drycleaning solvent or breakdown products. During the PIB activities, additional wells were added at the Site. The PIB report showed groundwater was severely impacted directly beneath one of the former drycleaning machine locations near the rear door of the facility (PCE concentration of 88,000 micrograms per liter). The PIB report further suggested groundwater flows to the east-northeast, away from the rear of the facility (Figure 6). Groundwater was also impacted in areas approximately 7 feet south of the rear of the building from the former location of the drycleaning machines (Figure 7). The concentrations in wells installed outside the rear of the building are much less than beneath the former machine locations near the rear door.

The lease space is currently vacant. The site is locked and no indications of trespassing were noted in this urban, well-travelled area. No physical hazards were present.

As part of the PIB, DCERP required investigation of the indoor air at the Site due to its immanent reuse. Indoor air sampling was conducted at two locations inside the former cleaners. The former boiler room and the area near the former locations of the drycleaning machines were tested. TDEC DCERP requested TDH EEP review this indoor air data.

Discussion

Introduction to Chemical Exposure

To determine whether persons have been or are likely to be exposed to chemicals, TDH EEP evaluates mechanisms that could lead to human exposure. An exposure pathway contains five parts:

- A source of contamination
- contaminant transport through an environmental medium
- a point of exposure
- a route of human exposure, and
- a receptor population.

An exposure pathway is considered complete if there is evidence that all five of these elements are, have been, or will be present at the site. A pathway is considered potential if there is a lower probability of exposure. If there is no evidence that at least one of the five elements listed is, has been, or will be present at the site, then it is considered an incomplete exposure pathway. For this site, there is a completed exposure pathway for the inhalation of drycleaner solvent vapors.

Physical contact alone with a potentially harmful chemical in the environment by itself does not necessarily mean that a person will develop adverse health effects. A chemical's ability to affect public health is controlled by a number of other factors, including:

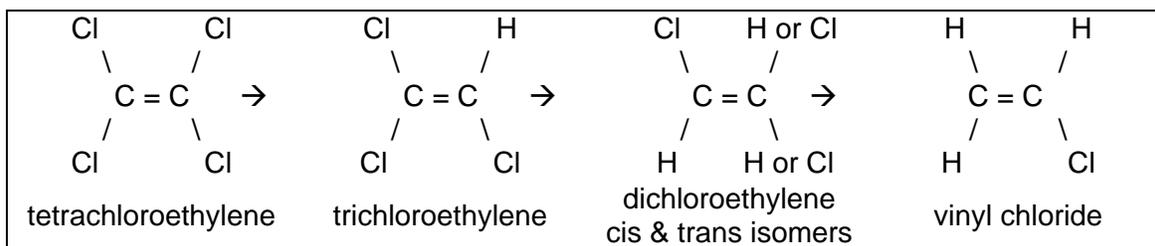
- The amount of the chemical that a person is exposed to (dose)
- the length of time that a person is exposed to the chemical (duration)
- the number of times a person is exposed to the chemical (frequency)
- the person's age and health status, and
- the person's diet and nutritional habits.

The purpose of this public health consultation is to examine any potential health hazard from PCE, TCE, and other drycleaner-related compounds present at the site. To evaluate exposure to a hazardous substance, health assessors often use health comparison values. If the chemical concentrations are below the comparison value, then health assessors can be reasonably certain that no adverse health effects will occur in people who might be exposed. If concentrations are above the comparison values for a particular chemical, then further evaluation of that chemical is in order.

Based on the data provided, a completed exposure pathway exists for indoor air and for groundwater at the Site. These exposures are evaluated in more detail in the Discussion section of this document.

Drycleaner Solvent Explanation

The process of drycleaning is not truly dry, but it uses so little water that it has come to be known as drycleaning. Instead of water, chemical solvents are used in the cleaning process. The most commonly used solvent for drycleaning is tetrachloroethylene or perc. It is colorless liquid and has sweet smell (ATSDR 1997). Perc is a volatile organic compound. It will quickly evaporate into a gas at room temperature. As its name implies, tetrachloroethylene has four chlorine anions on a two-carbon molecule. As these chlorine anions react, the molecule breaks down into other chlorinated volatile organics. Each of these breakdown products has slightly different chemical properties and toxicities. The following diagram is a example of how one chemical can breakdown to form another.



For example, tetrachloroethylene (PCE) can breakdown to trichloroethylene (TCE), then to dichloroethylene (DCE), and then to vinyl chloride (VC). Each of these breakdown products can act independently. The only way to truly know the ratio of these breakdown products is to collect environmental samples. The drycleaner solvent, tetrachloroethylene, and all of its breakdown products plus their isomers were carefully considered in developing this report.

To evaluate exposure to a hazardous substance, health assessors often use health guidance values. If the chemical concentrations are below the guidance value, then health assessors can be reasonably certain that no adverse health effects will occur in people who are exposed. If concentrations are above the guidance values (ATSDR 2007a, 2008) for a particular chemical, then further site evaluation is needed.

ATSDR environmental media evaluation guidelines (EMEGs) and minimum risk levels (MRLs) are based on conservative assumptions about chemical exposure. EMEGs and MRLs consider non-cancer adverse health effects. Exposure durations are defined as acute (14 days or less), intermediate (15–364 days) and chronic (365 days or more) exposures. For cancer effects, ATSDR uses US Environmental Protection Agency (EPA) information to set their cancer risk evaluation guidelines (CREGs) for lifetime exposure.

Environmental Sampling

On March 24, 2008, TVG, under the authorization of TDEC DCERP, performed indoor air monitoring in two locations within the former drycleaner (Figure 7). A Summa canister was deployed at breathing height both within the former Boiler Room of the cleaners (Sample #1) and in the vicinity of the former location of the drycleaning machines (Sample #2). Air samples were collected over a 24-hour time period and were analyzed by Environmental Science Inc. of Mount Juliet, Tennessee, using EPA Method TO-15 (EPA 1999).

TABLE 1. Indoor air data for the former lease space of the former Green Hills Cleaners, Nashville, Davidson County, TN. Collected on March 24, 2008, over 24 hours with a Summa canister (TVG). Analytical method detection limits were appropriately low. Values reported in parts per billion. Health screening guidelines based on chronic exposure duration (ATSDR 2007a, 2008).

Chemical	Acronym	Sample #1 Former Boiler Room	Sample #2 Former Machine Area	ATSDR MRL/EMEG (non-cancer)	ATSDR CREG (10 ⁻⁶ excess cancer risk)
		ppb	ppb	ppb	ppb
tetrachloroethylene	PCE	4.9	5.9	40	na
trichloroethylene	TCE	0.76	0.44	100	0.9 ^{NY}
1,1-dichloroethylene	1,1-DCE	ND	ND	20i	nc

TABLE 1. Indoor air data for the former lease space of the former Green Hills Cleaners, Nashville, Davidson County, TN. Collected on March 24, 2008, over 24 hours with a Summa canister (TVG). Analytical method detection limits were appropriately low. Values reported in parts per billion. Health screening guidelines based on chronic exposure duration (ATSDR 2007a, 2008).

Chemical	Acronym	Sample #1 Former Boiler Room	Sample #2 Former Machine Area	ATSDR MRL/EMEG (non-cancer)	ATSDR CREG (10 ⁻⁶ excess cancer risk)
		ppb	ppb	ppb	ppb
cis-1,2-dichloroethylene	cis-1,2-DCE	ND	ND	ngv	nc
trans-1,2-dichloroethylene	trans-1,2-DCE	ND	ND	200i	nc
vinyl chloride	VC	ND	ND	30i	0.04
1,1-dichloroethane	1,1-DCA	ND	ND	ngv	ngv
1,2-dichloroethane	1,2-DCA	ND	ND	600	0.01

Notes:

- ND = not detected (above the analytical detection limit in the air sample)
- na = not applicable (Due to a lack of federal guidance and the placement of PCE on a continuum between carcinogenic classifications, only the guidance value for non-cancer effects was considered).
- NY = New York State Department of Health's guidance (used in absence of federal guidance)
- i = intermediate value for 15-364 days exposure; typically higher than a chronic value
- nc = not classified as a carcinogen
- ngv = no guidance value available
- bold** = value exceeds a guidance value

Drycleaner Solvents and Breakdown Products

There were vapor detections of the drycleaner solvent PCE in both the boiler room and former drycleaner machine area indoor air samples. Additionally, there were detections of one chemical breakdown product of PCE, TCE in both indoor air samples. Therefore, a completed exposure pathway to indoor air exists. All other chemical breakdown products of PCE were not detected in indoor air (One additional chemical, chloromethane, was detected in indoor air. Although this chemical is not a breakdown product of PCE, it is a breakdown product of carbon tetrachloride. The origin of the chloromethane in the indoor air is unknown). All analytical detection limits were appropriately a fraction of a part per billion.

Non-Cancer Evaluation

Concentrations of PCE and TCE in the former boiler room and former drycleaning machine area samples were well below their respective Agency for Toxic Substances and Disease Registry (ATSDR) minimal risk levels (MRLs). The ATSDR uses the no observed adverse effect level/uncertainty factor (NOAEL/UF) approach to derive non-cancer adverse health effect MRLs for hazardous substances. MRLs are set below levels that, based on current information, might cause adverse health effects in the people most sensitive to such substance induced effects. MRLs are derived for acute (1 to 14 days), intermediate (15 to 364 days), and chronic (365 days and longer) exposure durations, and for the oral and inhalation routes of exposure. ATSDR does not use serious health effects (such as irreparable damage to the liver or kidneys, or birth defects) as a basis for establishing MRLs. Exposure to a level above the MRL does not mean that adverse health effects will occur (ATSDR 2007). In this case, the indoor air results were compared to chronic MRLs to represent a worst case scenario. In this case, the exposure would be over a long period of time for individuals working in the former cleaner's space. In cases where no chronic MRLs were published for a compound, the results were compared to intermediate MRLs. There is no apparent non-cancer health hazard at the Site.

Cancer Evaluation

Concentrations of PCE and TCE were also compared to ATSDR cancer risk evaluation guide (CREGs) for no more than 1 excess cancer in 1,000,000 people exposed during their lifetime (70 years). CREGs are calculated from EPA's cancer slope factors for oral exposures or unit risk values for inhalation exposures. These values are based on EPA evaluations and assumptions about hypothetical cancer risks at low levels of exposure. ATSDR does not have a published CREG for TCE. Because of this, EEP has adapted an indoor air guidance value for TCE established by the New York State Department of Health for comparison purposes (NYSDOH 2006).

The method detection limits for the drycleaner-related chemicals vinyl chloride and 1,2-dichloroethane were 0.4 ppm for each. The CREG values for each of these chemicals are lower than the 0.4 ppm detection limit. Therefore, an assessment of the cancer risk for these two chemicals can not be performed. Because the detection limits are not adequately low, it is unknown if the concentrations of drycleaner-related chemicals in the indoor air locations sampled would create an indoor air health hazard to occupants of the space.

It is unknown if concentrations of drycleaner-related chemicals that would pose a health hazard exist in adjacent lease spaces or separate buildings near the former cleaners location. Based on drycleaner suite data and limited extent of the groundwater plume beneath the building area there is no indication that the neighboring suite has indoor air concerns. As there is a pick-up store, there will be solvent vapors present due to off-gassing of the drycleaner chemical vapors.

Evaluation of Tetrachloroethylene (PCE) $Cl_2C=CCl_2$

PCE is commonly called "perchloroethylene" or "*perc*" in the drycleaning industry. Introduced in the 1930s, PCE is the solvent, or cleaning agent, most often used by professional drycleaners.

PCE removes stains and dirt from all common types of fabric. Additionally, PCE can be reclaimed after the drycleaning process and reused, helping to make it a cost-effective professional cleaner.

Tetrachloroethylene (PCE) is a clear, colorless liquid said to produce a sharp, sweet smell. It evaporates very readily at room temperature. PCE is a synthetic chemical and is often used as a starting point for the manufacture of other chemicals (ATSDR 1997). People can detect the smell of PCE in the air at 1 part per million (ppm) or more. Background concentration of PCE in the environment is usually less than 1 ppb. PCE has been widely used in the drycleaning industry for decades. Clothes brought home from a drycleaners may release small amounts of PCE into the air. The significance of exposure to small amounts of PCE is unknown, but to date, they appear to be relatively harmless (ATSDR 1997).

Evaluation of Trichloroethylene (TCE) $HCIC=CCl_2$

Trichloroethylene (TCE) is a clear, colorless liquid said to produce a sharp, sweet odor and a sweet, burning taste. It is nonflammable and evaporates easily at room temperature. If TCE is released to surface water or surface soil, it will mostly evaporate into the air and disperse.

Most people can detect the smell of TCE in air at around 100 ppm. Background concentration of TCE in the environment is usually less than 1 ppb. TCE is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers (ATSDR 1997).

Concentrations of Other Compounds in Site Indoor Air

The indoor air samples collected also identified the presence of other compounds not related to drycleaning including acetone, benzene, chloromethane, ethanol, freon-12, heptane, tetrahydrofuran, toluene, 1,2,4-trimethylbenzene, 2,2,4-trimethylpentene, and x&p xylenes. Many of these compounds are associated with petroleum products or paint. With the location of the former Mapco gas station being next to the former cleaner's space, it is likely that many of these compounds are from the activities conducted on the former Mapco parcel. Concentrations of these compounds are below their respective screening value MRLs. Therefore, the concentrations of these compounds at the site do not indicate a health hazard. Information about the non-drycleaning related compounds measured in the highest concentrations in the indoor air samples follows in the Appendix.

Future Considerations

Additional sampling should also be considered for the lease space adjacent to the "new" location of the Green Hills Cleaners to verify vapors from the cleaners have not migrated to that space. There is no reason at this time to sample indoor air within the "new" location of the cleaners due to likely off-gassing of drycleaner-related compounds from clothing within the cleaners. The analysis should provide for appropriately low detection limits for the chemicals analyzed.

When former cleaner's space is leased, future indoor air monitoring is necessary to confirm the lack of continued migration of vapors from the groundwater plume beneath the building, as there

is a completed exposure pathway to groundwater at the site. This indoor air monitoring should have appropriately low detection limits for the chemicals analyzed. According to the TVG report it appears groundwater is migrating to the southeast, away from the rear of the former cleaners building. Also according to the TVG report, groundwater is not used as a source of drinking water in the area.

If a mobile multi-phase extraction event or a chemical oxidation injection event is conducted at the site as part of a remediation program, consideration should be given to performing another indoor air sampling event. Samples should be collected in the areas previously sampled as well as from a lease space near the current location of the cleaner. The indoor air sampling should be conducted a minimum of three months after the remedial activity. The event would be used to identify if remedial activities have increased the concentrations of indoor vapors.

Child Health Considerations

In communities faced with air, water, or food contamination, the many physical differences between children and adults demand special emphasis. Children could be at greater risk than adults from certain kinds of exposure to hazardous substances (ATSDR 1997, 1998). Children have lower body weights than adults. Although children's lungs are usually smaller than adults, children breathe a greater relative volume of air compared to adults. If toxic exposure levels are high enough during critical growth stages, the developing body systems of children can sustain permanent damage. Finally, children are dependent on adults for access to housing, for access to medical care, and for risk identification. Thus, adults need as much information as possible to make informed decisions regarding their children's health. In preparation of this health document, the health of children was thoughtfully considered. The lease space is currently vacant. The site is locked and no indications of trespassing were noted in this urban, well-travelled area. No physical hazards were present. No health hazards unique to children were observed during this investigation of the former Green Hills Cleaners.

Conclusions

1. An indeterminate public health hazard exists within the lease space of the former Green Hills Cleaners, Nashville, Davidson County, DCERP site #19-200. The March 2008 air sampling for former drycleaner solvent and breakdown product vapors did not have low enough detection limits for vinyl chloride and 1,2-dichloroethene to evaluate these compounds against their respective CREG values.
2. An indeterminate health hazard exists in any adjacent lease space in the strip shopping center or in any adjacent stand-alone structure, due to the operation of the former cleaners. No indoor air sampling has been done in any other lease space or adjacent structure to evaluate potential risks to health.

Recommendations

1. TDEC DCERP should collect more indoor air data for the former cleaners lease space. The detection limits should be appropriately low enough to evaluate the cancer risk of drycleaner solvent and all its breakdown products, such as 1,2-dichloroethane and vinyl chloride.
2. TDEC DCERP should gather more data to rule out the possibility of involuntary exposure of adjacent store employees to drycleaner solvent or breakdown product vapors. Data should be gathered with appropriately low detection limits, especially for 1,2-dichloroethane and vinyl chloride, such that evaluation of both potential non-cancer and cancer risks can be performed.

Public Health Action Plan

1. This report and any needed explanation will be provided to the TDEC DCERP. This report will also be provided to the property owner, or a future lessee should the former cleaner space be redeveloped, and to the Green Hills Cleaners owner.
2. TDH EEP will continue to work with TDEC DCERP as the site continues through the DCERP regulatory process.
3. TDH EEP will be available to review additional data should the need arise.

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FIGURES

FIGURE 1 - Photo of the Former Green Hills Cleaners location (right center), 4106 Hillsboro Road. Nashville, Davidson County, Tennessee. (Photo credit: David Borowski, TDH, 05/06/08)



FIGURE 2 - View of retail establishments at the northern end of the shopping center, near the former cleaner location. (Photo credit: Joe George, TDH, 05/06/08)



FIGURE 3 - The adjacent area to the south from the former Green Hills Cleaners location, 4108 Hillsboro Road. (Photo credit: Joe George, TDH, 05/06/08)



FIGURE 4 - The slope of the parking area east and southeast of the rear of the former Green Hills Cleaners location. According to the TVG PIB report, groundwater is thought to flow in this direction from the rear of the cleaner. (Photo credit: Joe George, TDH, 05/06/08)



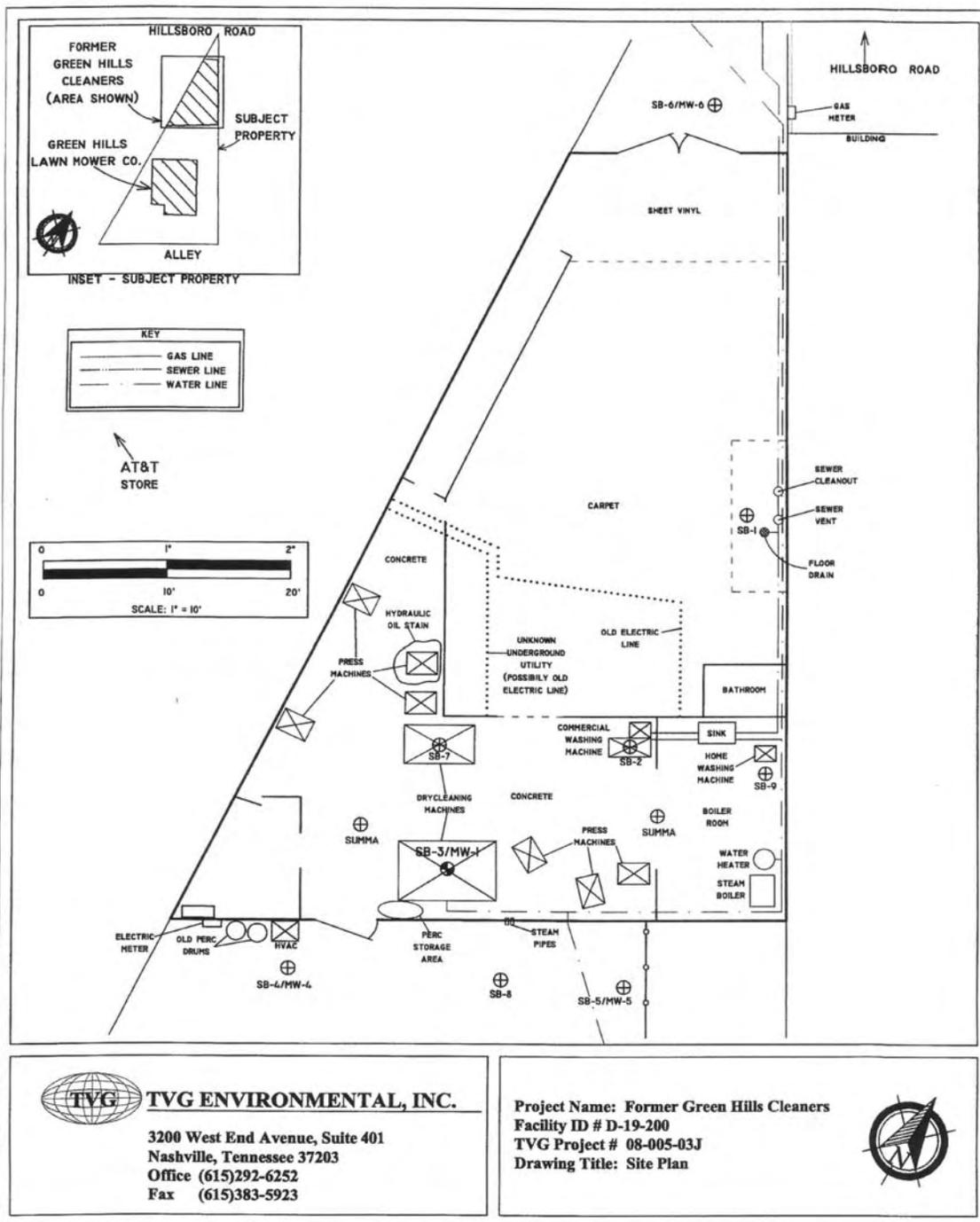


FIGURE 5 - Details of the Former Green Hills Cleaners Lease Space. Drawing Credit: TVG Environmental Inc., Prioritization Investigation - Task Group B Report, April 1, 2008.

APPENDIX

Acetone

Acetone vapors were also detected in both air samples from the cleaners. Acetone vapor concentrations were detected at 2.9 ppb in the former boiler room sample and at 7.9 ppb in the former drycleaning machine area. The ATSDR MRL for chronic exposure to acetone is 13,000 ppb. Whatever the source of the acetone vapors at the site, they do not pose a potential health risk.

Benzene

The chemical vapor, benzene, was detected in both air samples. Benzene is not a breakdown product of the drycleaner solvent tetrachloroethylene, but a component of gasoline. The benzene could be from the Mapco gas station parcel adjacent to the cleaners. Or the benzene may be part of the normal ambient air for the urban area in which the cleaners was located as it is a component of automobile exhaust. Benzene was measured at 0.47 ppb in the former boiler room and at 0.41 ppb in the former drycleaning machine locations. The ATSDR MRL for chronic exposure to benzene in air is 3 ppb. This value is likely related to or represents background ambient air levels. This means that benzene vapors, whatever their source, are not a potential health threat.

Chloromethane

Chloromethane also known as methyl chloride, was detected in both air samples within the former drycleaner lease space. The concentration of chloromethane in air in the boiler room was 0.55 ppb while chloromethane was detected at 0.57 ppb in air in the area of the former location of the drycleaner machines. Chloromethane is a breakdown product of carbon tetrachloride which is not one of the solvent used in drycleaning. Carbon tetrachloride could be an ingredient in one of the spot removing fluids drycleaners use.

The ATSDR MRL for chronic exposure to chloromethane is 50 ppb. Therefore, the chloromethane vapors are not a potential health risk in the former cleaner.

The EPA has determined chloromethane is a possible human carcinogen and the Occupational Safety and Health Administration (OSHA) has set work place levels for chloromethane at 100 parts per; million for an 8-hour work day in a 40 hour work week

Toluene

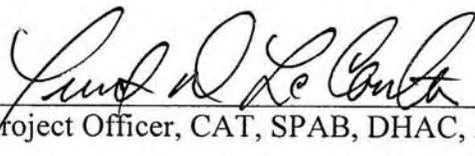
Toluene was also detected in both air samples, at 1.7 ppb and 1.2 ppb respectively in the former boiler room and drycleaning machine locations. Like benzene, the toluene is a component of gasoline and could be from the Mapco gas station parcel adjacent to the cleaners. Or the toluene may be part of the normal ambient air for the urban area in which the cleaners was located as it is a component of automobile exhaust. The ATSDR MRL for chronic exposure to toluene is 80 ppb. Therefore, the toluene vapors are not a potential health risk.

Xylenes

m&p Xylene vapors were identified only in the former boiler room air sample, at a concentration of 0.96 ppb. Like benzene and toluene, xylene is a component of gasoline and could be from the Mapco gas station parcel adjacent to the cleaners or it may be part of the normal ambient air for the urban area in which the cleaners was located as it is a component of automobile exhaust. The ATSDR MRL for chronic exposure to total xylenes is 50 ppb. Therefore the m&p xylene vapors are not a potential health risk.

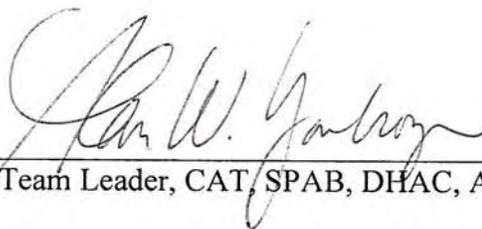
Certification

This Public Health Consultation: *Former Green Hills Cleaners, DCERP Facility ID No. D-19-200,, Nashville, Davidson County, Tennessee*, was prepared by the Tennessee Department of Health Environmental Epidemiology under a Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It was prepared in accordance with the approved methodology and procedures that existed at the time the health consultation was begun.



Technical Project Officer, CAT, SPAB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health assessment and concurs with the findings.



Team Leader, CAT, SPAB, DHAC, ATSDR