

Health Consultation

WHITE WAY CLEANERS

NASHVILLE, DAVIDSON COUNTY, TENNESSEE

JANUARY 13, 2004

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

WHITE WAY CLEANERS

NASHVILLE, DAVIDSON COUNTY, TENNESSEE

Prepared by:

Tennessee Department of Health
Under a Cooperative Agreement with the
The Agency for Toxic Substances and Disease Registry

Background and Statement of Issues

In November 2003, the Tennessee Department of Environment and Conservation (TDEC), Division of Superfund (DSF), Drycleaner Environmental Response Program (DCERP), contacted the Tennessee Department of Health (TDH), Division of Environmental Epidemiology (EEP). DCERP requested that EEP review environmental sampling data and answer community concerns regarding cleanup of the former White Way Cleaners site. The White Way Cleaners site is located at 1201 Villa Place, Nashville, Davidson County, Tennessee, 37212. The 40,000 sq ft plant was constructed as a laundry in 1931. It was operated as a large-scale drycleaning business from 1947 until 2002 (Figure 1).

Over the years, the drycleaning industry has used several different cleaners. Two commonly used cleaners have been the petroleum-based Stoddard solvent and the volatile organic solvent perchloroethylene (PCE). PCE is commonly called perc and scientifically referred to as tetrachloroethylene. At sites where drycleaning was performed for many years, it is not uncommon to find that cleaning solvents lost through routine operations have contaminated the area. The State of Tennessee has established the DCERP to cleanup sites where drycleaning operations have created pollution. In 1999, White Way Cleaners entered into the DCERP. Site evaluation measurements of soils, groundwater, soil gas, and air discovered elevated levels of drycleaner solvents in on-site soil and area groundwater (TVG 2003a).

On November 6, 2003, TVG Environmental, Inc., under direction of the DCERP, collected six air samples using Summa canisters. The Summa canisters were placed in the crawlspaces or basements of homes adjacent to the former White Way Cleaners site. The laboratory data of these air samples is the focus of this health document.

On November 18, DCERP hosted a meeting with several concerned citizen leaders. TDH EEP staff was in attendance. In addition, the meeting included several professionals, including college professors and an attorney, all of which represented the local residents' perspective for the site. This meeting was designed to serve as a prelude to a public availability session for the community.

On November 19, EEP staff visited the White Way Cleaners site. Several photographs were taken to detail the building (Figure 2), proximity of nearby houses (Figure 3), the former work area (Figure 4), and monitoring wells (Figure 5). No indications that surface pollution was a problem were encountered.

On December 11, TDEC DCERP sponsored a public availability session. It provided a face-to-face opportunity for the public to ask questions concerning the site, the cleanup plan, or health issues. EEP had a table display with fact sheets, a questionnaire, and several staff available to assist the local community with environmental health issues. 196 meeting notices (Appendix A) were distributed. About 40 people attended the meeting. Three TV stations covered the event during their evening news broadcasts.

Discussion

Environmental Sampling

The DCERP Remedial Alternatives Study (RAS) (TVG 2003a) identified drycleaner solvents in soil and within groundwater. The report included soil gas data and monitoring well data that was used to construct groundwater contaminant plumes. The plumes are concentrated under the former White Way Cleaners building footprint. The data suggests that some migration of chemicals has occurred over the years. Migration appears to follow a former combined sewer and storm drain. No surface soil is known to be contaminated. No persons are thought to be using groundwater via a private well. Therefore, the only possible completed exposure pathway would be chemical vapors moving from the soil or groundwater into breathable air. DSF and DCERP personnel completed the EPA Johnson Ettinger model for vapor intrusion. The model predicted that vapor intrusion would not be a risk. DCERP conducted air sampling at locations in close proximity to the contaminants to verify there were no vapor intrusion hazards.

On November 6, 2003, Summa canisters were placed in the crawlspace or basement of six (6) homes near the former White Way Cleaner site (Figure 6). TDEC DCERP wanted to ensure that pollution that had reached groundwater was not a health risk to nearby people via soil vapor intrusion. Table 1 provides the results of the air sampling.

TABLE 1. Results of Summa canister air sampling for drycleaner solvent or breakdown daughter products (ppb) in crawlspaces or basements of homes near the White Way Cleaner site, collected November 6, 2003, Nashville, Davidson County, Tennessee (TVG 2003b).

Chemical	House 1	House 2	House 3	House 4	House 5	House 6
tetrachloroethylene	<2.0	<2.0	<2.0	<2.0	<2.0	4.1*
trichloroethylene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
cis- 1,2-dichloroethylene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
trans- 1,2-dichloroethylene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
vinyl chloride	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

< Values reported with "<" represent zero; or less than the detection level shown
 * ATSDR EMEG health screening value for PCE is 40 parts per billion (ppb)

In only 1 of 6 samples was any drycleaner solvent or a breakdown product detected (TVG 2003b). The ATSDR provides health comparison values that are protective of public health as tools for use in evaluating environmental data. The amount measured in House 6 was 4.1 parts per billion (ppb) of PCE in air by volume. This tiny amount is nearly ten times less than the chronic environmental media evaluation guideline (EMEG) of 40 ppb PCE in air established by the ATSDR (2003). No breakdown daughter products were measured in any air sample. In short, drycleaner solvent vapors are not chemicals of concern for any of the homes sampled. The homes sampled were nearest to the former White Way Cleaners site and provide an accurate description of what other nearby homeowners can expect within their indoor air.

Air Sampling in Crawlspace and Basements

It is important to note the ease at which a chemical can be detected in a crawlspace or basement. Many laboratory instruments can measure very tiny amounts of chemicals. These very tiny amounts are often present in the air we breathe due to everyday activities such as driving cars, painting finger nails, house cleaning, or simply storing chemicals. Often times, an air sampler will detect a tiny amount of a chemical at a level that does not pose a threat. After reviewing all of the laboratory datasheets from the Summa canister sampling, EEP determined that no unexpected, unexplainable chemical vapors were present. Therefore, in preparation of this health document, the EEP decided not to present laboratory data for all chemicals measured or analyzed for (TVG 2003b). Just because a chemical was detected does not mean that it came from the contaminated site in question. For example, heptane, which was present in all six samples, was a gas used during the shipping of the environmental samples. Acetone was measured in another Summa canister. Acetone is a very common component of several household cleaners. The sample analysis also detected 2-propanol. This chemical is commonly called rubbing alcohol and is used as disinfectant in both the laboratory and many homes.

The drycleaner solvent plumes, created from soil gas and groundwater data, do not appear to have grossly contaminated properties beyond the former White Way Cleaners site. Given the plumes extent and the new no completed exposure pathway for indoor air from the Summa canister sampling, there is no evidence that a past health threat existed.

The former White Way Cleaners site is scheduled to be redeveloped into new construction. Plans include subsurface parking, street-level businesses, and upper-level flat-style housing. Future health implications are uncertain as soil vapor intrusion has been shown to be an exposure pathway at other drycleaner sites. DCERP has an initial remediation plan written (TVG 2003c). The plan includes the removal of soil from the contamination source areas. Also, the plan includes two mobile enhanced multi-phase extraction (MEME) units to pump-and-treat contaminated groundwater.

Local residents were concerned about demolition, blasting, and construction creating new problems. It is possible for these activities to complete an exposure pathway by moving the drycleaner solvents underground or allowing them to evaporate into neighborhood air. Because of the unknown factors that could cause the pollution to move, it is suggested

that the site be cleaned up prior to reuse. The DCERP remediation process is a planned, phased-approach that will sample for contamination at multiple points to ensure the site is successfully cleaned. Completion of DCERP's initial remediation work plan should dramatically reduce the drycleaner solvent pollution such that during redevelopment minimal contamination should remain. If construction exposes drycleaning solvent to the atmosphere, then it should evaporate. Wind mixing and dilution should prevent health issues in neighborhood air. As a precaution, notification should be provided to the local residents prior to demolition-intensive workdays.

Tetrachloroethylene (PCE)

Tetrachloroethylene (PCE) is commonly called perchloroethylene or perk 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. PCE does not usually cause clothes to shrink or dyes to bleed. PCE is not flammable unlike many other common solvents. 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 is nonflammable and 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). If PCE pollutes surface water or surface soil, it will mostly evaporate into the air and disperse. PCE can travel through soil easily. If PCE gets into underground water, it can remain there for many months or years without breakdown.

People can detect the smell of PCE in the air at 1 part per million (ppm) or more. Background concentration of PCE in outdoor air is usually less than 1 part per billion (ppb). PCE is used in certain consumer products including repellents, silicone lubricants, fabric finishers, spot removers, adhesives, and wood cleaners. Tetrachloroethylene has been widely used in the drycleaning industry for decades. Clothes brought home from 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).

Stoddard Solvent

A blend of synthetic organic solvents, Stoddard solvent, comes from the refining of crude oil. It is a petroleum mixture made from distilled alkanes, cycloalkanes (naphthalenes), and aromatic compounds. Stoddard solvent is also commonly called drycleaning safety solvent, although it is no longer used in the drycleaning industry. It is used as paint thinner, in some printing inks, in dry cleaning, and as a general cleaner/degreaser. Stoddard solvent is a colorless, flammable liquid that smells like kerosene. It can be smelled in the air at 0.34 ppm (2 mg/m³) (ATSDR 1995).

Since Stoddard solvent is a mixture of chemicals, the chemicals can act separately when spilled or released into the environment. For example, in water some chemicals will quickly evaporate into the air, some will remain in the water, and some will attach to organic matter. Stoddard solvent is naturally broken down by sunlight, chemicals in ambient air, and by microorganisms. Stoddard solvent in large amounts can move through soil into groundwater.

Children's 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. 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 the preparation of this health document, the health of children was thoughtfully considered. No health threats unique to children that require special attention were observed during this drycleaner solvent investigation of the former White Way Cleaners.

Conclusions

1. No apparent public health hazard currently exists from drycleaner solvent vapors in homes near the former White Way Cleaners located at 1201 Villa Place, Nashville, Davidson County, Tennessee.
2. Site conditions during remediation or redevelopment could change the exposures at this site in the future.

Recommendations

1. Complete the DCERP initial remediation work plan, including the pollutant source removal and extraction, prior to demolition activities to prevent unpredictable changes in the drycleaner solvent distribution plumes.
2. DCERP will have oversight of the site and will monitor the levels of drycleaner vapors. DCERP will notify local residents of the levels found in future monitoring and will notify the residents prior to demolition that may cause a release of pollution.

Public Health Action Plan

1. TDH EEP participated in DCERP's public availability session on December 11, 2003, to discuss environmental health questions with local residents.
2. TDH EEP is available to review additional data.
3. TDH EEP will provide copies of this health consultation to the residents whose homes were sampled within, to the environmental regulatory agencies involved, to the Metropolitan Public Health Department of Nashville and Davidson County, to property owners that do not live the homes tested, and to other interested community members.
4. TDH EEP will continue to provide health education to residents, environmental regulatory agencies, and community members concerned about the site.
5. TDH EEP will maintain dialogue with TDEC DCERP throughout the remediation of the former White Way Cleaners site.

References

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[TDEC] Tennessee Department of Environment and Conservation. 2003. Public availability session flyer for December 11, 2003. Nashville, TN.

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[TVG] TVG Environmental, Inc. 2003b. Facsimile transmission: summa canister datasheets for White Way Cleaners sampled Nov. 6, 2003. Nashville, TN.

[TVG] TVG Environmental, Inc. 2003c. Work plan for initial remediation of suspected main source areas former White Way Cleaners. TVG project #03-136-10B. Nashville, TN.

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FIGURE 1

Map of the area near to the former White Way (dry) Cleaners site at 1201 Villa Place. Nashville, Davidson County, Tennessee, 37212 (Map credit: MapQuest.com)

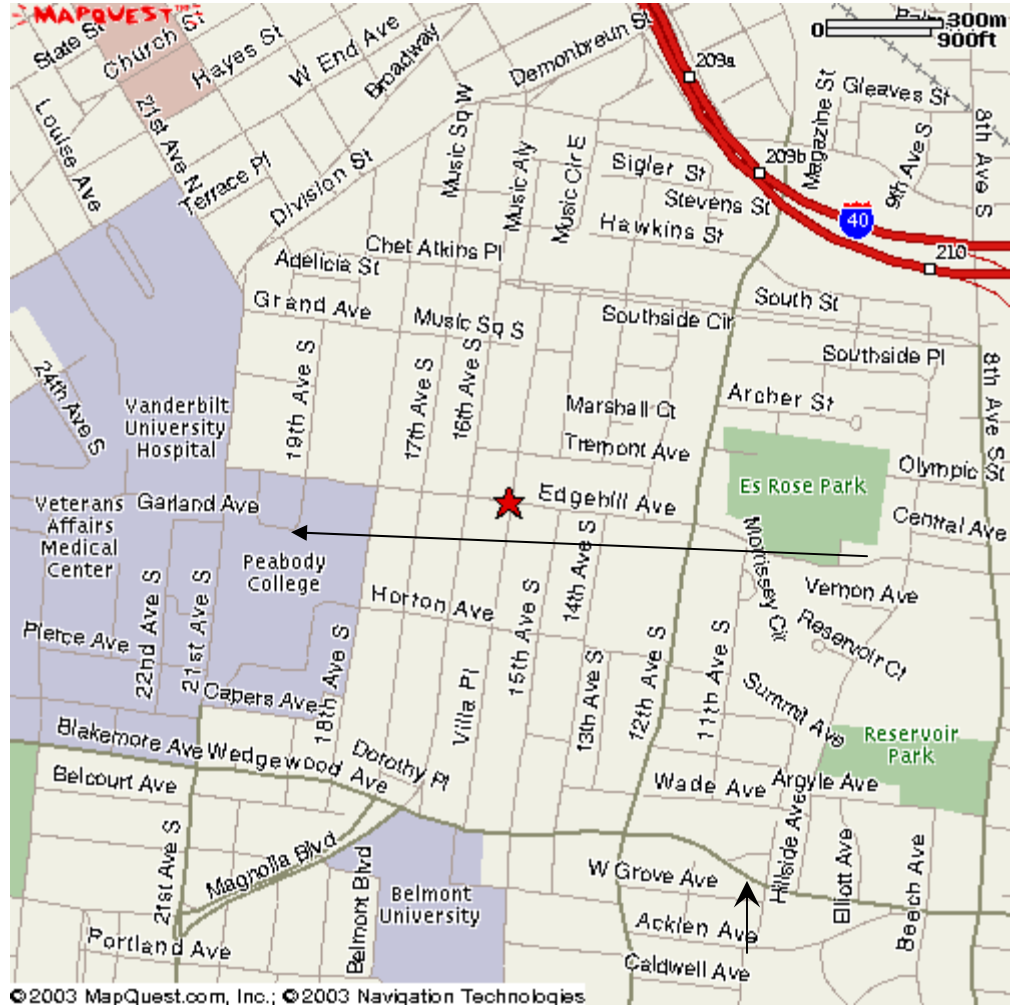


FIGURE 2 - Photo of former White Way Cleaners, 1200 Villa Place.
Nashville, Davidson County, Tennessee (Photo credit: David Borowski, TDH, 11/19/03)



FIGURE 3 - Photo of the intersection of Edgehill Avenue and Villa Place.
Nashville, Davidson County, Tennessee (Photo credit: David Borowski, TDH, 11/19/03)



FIGURE 4 - Photo of former White Way Cleaners interior.
Nashville, Davidson County, Tennessee (Photo credit: David Borowski, TDH, 11/19/03)



FIGURE 5 - Photo of monitoring well cover.
Nashville, Davidson County, Tennessee (Photo credit: David Borowski, TDH, 11/19/03)



APPENDIX A (TDEC 2003)



Tennessee Department of Environment and Conservation Drycleaner Environmental Response Program

The public is invited to attend an availability session concerning the former Whiteway Cleaners site that is located at 1201 Villa Place, Nashville, TN. The purpose of this session is to inform interested citizens and local officials of the nature and status of the current site investigation and to explain planned interim action plans. The availability session is scheduled for:

**December 11, 2003
6:30 to 8:00 PM
Edgehill United Methodist Church
1502 Edgehill Avenue
Nashville, TN**

SITE HISTORY:

The former Whiteway Cleaners operated at this site until 2002 and utilized several different dry cleaning solvents including Stoddard, a petroleum based cleaner, and perchloroethylene (PCE). The site entered the Dry Cleaner Environmental Response Program (DCERP) in 1999 and resulting investigations of soils, groundwater, soil gas and air have shown that an elevated level of solvents remain in on-site soils and in area groundwater. Soil gas measurements indicated the possibility of off-site air contamination but sampling of the crawl spaces of surrounding homes did not detect contamination at potential levels of concern. Off-site investigation of groundwater is continuing and DCERP needs information from area residents to help locate local wells, springs or any other exposure pathways.

PROPOSED INTERIM REMEDY

As a preliminary step, decreasing the quantity of solvent remaining under the former cleaners should help minimize the off-site migration of contamination. DCERP plans to remove contaminated soil and groundwater from the areas under and around the former Whiteway Cleaners property. This would be accomplished by removing soil down to bedrock in several locations inside and out of the building. Additionally, two extraction wells would be installed in areas with the highest levels of contamination in ground water. The extraction wells would be used to conduct several groundwater removal events and selected wells in the area would be re-sampled for a period of time to determine what effect the removals have had on groundwater contamination. Additional techniques could also be used to further enhance breakdown of contamination in the ground.

For more information or if you would like to mail concerns please contact:

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Certification

This Health Consultation: White Way Cleaners, 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.

Alan W. Farbrough

Technical Project Officer, SPS, SSAB, DHAC, ATSDR

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

Roberta Erlwein

Chief, State Program Section, SSAB, DHAC, ATSDR

Electronic Document