

Health Consultation

WHITE WAY CLEANERS

NASHVILLE, DAVIDSON COUNTY, TENNESSEE

MAY 20, 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 from 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.

You May Contact ATSDR TOLL FREE at
1-888-42ATSDR

or

Visit our Home Page at: <http://www.atsdr.cdc.gov>

HEALTH CONSULTATION

WHITE WAY CLEANERS - UPDATE

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

This health consultation is an update to the January 13, 2004, *Health Consultation: White Way Cleaners*. This health consultation answers questions about soil sampling and analysis in soil at two homes near the former White Way Cleaners site. The questions were posed to the Division of Environmental Epidemiology, Tennessee Department of Health by the Tennessee Department of Environment and Conservation (TDEC), Division of Superfund (DSF), Drycleaner Environmental Response Program (DCERP).

The White Way Cleaners site is located at 1201 Villa Place, Nashville, Davidson County, Tennessee, 37212. The 40,000 square foot plant was built as a laundry in 1931. It was operated as a large-scale dry cleaning business from 1947 until 2002. For the initial health consultation, EEP reviewed indoor air sampling and analysis data for dry cleaner solvent vapors in homes near the former dry cleaner site. EEP concluded that no apparent public health hazard currently existed from drycleaner solvent vapors in homes near the former White Way Cleaners, but that site conditions during remediation or redevelopment could change the exposures pathways in the future. No indicators of surface contamination were encountered. To prevent unpredictable changes in the drycleaner solvent distribution plumes, EEP recommended that DCERP complete the initial remediation work plan, including the pollutant source removal and extraction, before demolition began. Additionally, DCERP has oversight of the site and has monitored the levels of drycleaner vapors during site remediation.

A community open house on December 11, for the release of the initial health consultation. On January 20, 2004, DCERP staff took surface soil samples (0 – 2 inches) at two homes near the former White Way Cleaners site, at the request of the residents of the homes. These homes, House 1 and House 6, were sampled during the initial investigation to determine if drycleaner solvents were migrating into residences near the site. The house numbers used in this report match the numbers used in the initial health consultation. Soil at House 1 was sampled for two reasons:

- 1) The residents said that they saw workers from the former cleaners spilling something at the White Way property.
- 2) Some of the rings of a tree cut down in the backyard of this house were black. The residents of the home were concerned that the tree rings were black because of what they saw the workers spilling.

Soil at House 6 was sampled because 4.1 parts per billion (ppb) tetrachloroethylene was detected in the ambient air in the basement, as reported and discussed in the initial health consultation. The residents of the house also wanted to make sure that nothing was in the soil from the former dry cleaning site.

Discussion

DCERP staff sampled surface soil at each house and analyzed it for volatile organic compounds (VOCs) and extractable petroleum hydrocarbons (EPH). The belief was that EPH analysis would detect the presence of Stoddard Solvent, used many years ago as a dry cleaning solvent. This is not the case; however, 360,000 parts per billion (ppb) of EPH was detected in soil at House 1 and 480,000 ppb of EPH was found in soil at House 6. The sample location at House 1 was in the backyard near a large tree. The ground was covered with leaves and with sparse grass. The sample location House 6 at was in the front yard near a hedge and a tree. Their yard was mostly covered with grass and some leaves. (See Figure 1 for pictures of the sampling sites.)

No VOCs, including VOCs that are markers for gasoline, were detected in either sample. (See Table 1 for a list of VOCs.) Printed chromatographic results were compared with known petroleum products in an attempt to identify specific petroleum products. No specific petroleum products were detected in either sample.

The EPH test is non-specific for hydrocarbons in the $C_{12} - C_{40}$ range. Samples are analyzed with gas chromatography, but analysis is not followed by mass spectrometry. This means that hydrocarbons in the size range are detected, but chemical identification of individual compounds is generally not possible (Laura Adams, Tennessee Department of Health Environmental Laboratory, personal communications, February 19, 2004). Because phthalates also elute in the $C_{12} - C_{40}$ range, EEP asked for analysis of the soil samples for phthalates, but none were detected.

To reiterate, environmental sampling and analysis yielded the following results:

- No VOCS were detected.
- No VOCS that are markers of gasoline were detected.
- No petroleum products were detected.
- No phthalates were detected.
- 360,000 ppm and 480,000 ppm of unidentified organic compounds were detected in the samples analyzed for EPH.

Many biological chemicals are in the $C_{12} - C_{40}$ range. Common biological chemicals found in plant material that is in this size range include disaccharides, trisaccharides, pigments, digitalis, spices, saturated fatty acids, unsaturated fatty acids, plant hormones, vitamins A and E, and partially hydrolyzed starches and cellulose (Devlin 2002). Plants are prolific generators of exotic chemical compounds made of isoprene units, many of which are in the $C_{12} - C_{40}$ range (Devlin 2002, Mahler 1971, Oxford 2000). In addition, fungi and invertebrates, such as spiders and insects, make chitin, a structural component analogous to cellulose in plants (Mahler 1971). Partially hydrolyzed chitin will elute with EPH. It is not surprising to find hydrocarbons eluting in the same size range as EPH in soil samples taken in residential yards, with their concomitant plant material and small invertebrates. Exposure to these compounds is extremely unlikely to cause adverse health effects.

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 are 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. During this health investigation, no drycleaner products were detected in neighborhood soils. No health threats unique to children that require special attention were observed during this investigation of residential soil sampling and analysis near the former White Way Cleaners.

Conclusions

1. No public health hazard exists from exposure through skin contact, ingestion, or inhalation to drycleaner chemicals in soil at these homes near the former White Way Cleaners at 1201 Villa Place, Nashville, Davidson County, Tennessee.
2. Organic compounds detected during the analysis for extractable petroleum hydrocarbons (EPH) are most likely plant, fungi, or invertebrate metabolites.

Recommendations

1. DCERP will continue to have oversight of the site.

Public Health Action Plan

1. TDH EEP is available to review additional data.
2. TDH EEP will continue to provide health education to residents, environmental regulatory agencies, and community members concerned about the site.
3. TDH EEP will maintain dialogue with TDEC DCERP throughout the remediation of the former White Way Cleaners site.

References

[ATSDR] Agency for Toxic Substances and Disease Registry. 1997. Healthy children—toxic environments. Report of the Child Health Workgroup presented to the Board of Scientific Counselors. Atlanta: US Department of Health and Human Services.

[ATSDR] Agency for Toxic Substances and Disease Registry. 1998. Promoting children's health—progress report of the Child Health Workgroup, Board of Scientific Counselors. Atlanta: US Department of Health and Human Services.

Devlin, Thomas M. 2002. Textbook of biochemistry with clinical correlations, 5th ed. New York: Wiley-Liss.

Mahler, HR, Cordes, EH. 1971. Biological chemistry, 2nd ed. New York: Harper and Row Publishers.

Oxford dictionary of biochemistry and molecular biology, revised edition. 2000. Smith AD, Datta P, Smith G, Bentley P, Campbell P, McKenzie H, eds. Oxford: Oxford University Press.

Preparers of Report

Bonnie Bashor, MS, Director
David Borowski, MS, Environmental Specialist
Tennessee Department of Health (TDH)
Division of Communicable and Environmental Disease Services (CEDS)
Environmental Epidemiology (EEP)
4th Floor Cordell Hull Building
425 5th Avenue North
Nashville TN 37247-4911

Reviewers of Report

Nancy Frazier, TDEC Division of Superfund, DCERP
Jim Gilbert, TDEC Division of Superfund, DCERP

ATSDR Technical Project Officer

Teresa C. Foster
Division of Health Assessment and Consultation
Superfund Site Assessment Branch

FIGURE 1

Pictures of the sampling sites near the former White Way (dry) Cleaners site at 1201 Villa Place. Nashville, Davidson County, Tennessee, 37212



House 1



House 6

(Photo credit: Jim Gilbert, TDEC, April 8, 2004)

Table 1

List of Volatile Organic Compounds (VOCs) for which sampling and analysis were performed on surface soil samples (0 – 2 inches) at House 1 and House 6 near the former White Way (dry) Cleaners site at 1201 Villa Place. Nashville, Davidson County, Tennessee, 37212

Acetone	<i>cis-, trans</i> -1,3-Dichloropropene
Benzene	Ethylbenzene
Bromochloromethane	2-Hexanone
Bromodichloromethane	Isopropylbenzene
Bromoform	Methyl acetate
Bromomethane	Methy- <i>tertiary</i> -butyl ether
2-Butanone (MEK)	Methylcyclohexane
Carbon disulfide	Methylene chloride
Carbon tetrachloride	4-Methyl-2-pentanone
Chlorobenzene	Styrene
Chloroethane	1,1,2,2-Tetrachloroethane
Chloroform	Tetrachloroethene
Chloromethane	Toluene
Cyclohexane	1,2,3-Trichlorobenzene
1,2-Dibromoethane	1,2,4-Trichlorobenzene
1,2-Dibromo-3-chloropropane	1,1,1-Trichloroethane
Dibromochloromethane	1,1,2-Trichloroethane
1,1-Dichloroethane	Trichloroethene
1,2-Dichloroethane	Trichlorofluoromethane
1,1-Dichloroethene	1,1,2-Trichloro-1,2,2-trifluoroethane
<i>cis</i> -1,2-Dichloroethene	Vinyl chloride
<i>trans</i> -1,2-Dichloroethene	<i>o-, m-, p</i> -Xylene
1,2-Dichloropropane	

CERTIFICATION

This White Way Cleaners – Update Health Consultation was prepared by the Tennessee Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

Teresa C. Foster

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 Erlwine

Chief, State Program Section, SSAB, DHAC, ATSDR