

# Health Consultation

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TEMERSON SQUARE, LOTS 1, 2, & 3

CITY OF TUSCALOOSA, TUSCALOOSA COUNTY, ALABAMA

EPA FACILITY ID: ALR000019372

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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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Prepared by:  
Alabama Department of Public Health  
Under Cooperative Agreement with the  
U.S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry

## Foreword

The Agency for Toxic Substances and Disease Registry (ATSDR) was established by Congress in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also called the *Superfund* law. That law set up a fund to pay for identifying and cleaning up our country's hazardous waste sites. The United States Environmental Protection Agency (EPA) and state environmental agencies oversee the site investigation and clean up actions. Historically, public health assessments are conducted by environmental and health scientists from ATSDR. In 1993, the Alabama Department of Public Health (ADPH) entered into a cooperative agreement with ATSDR, the goal of which was that ADPH would perform this function in Alabama.

In 1986, the Superfund Amendments and Re-authorization Act (SARA, Title III) required ATSDR to conduct a public health assessment at each site on the EPA National Priorities List (NPL). Public health assessments seek to discover whether people are being exposed to hazardous substances. If people are exposed or have the potential to be exposed, ATSDR decides whether the exposure is harmful and at what level health effects might occur; from these data, a decision can be made whether the exposure should be stopped or reduced.

**Exposure:** ADPH health assessors review environmental data to see how much contamination is at a site, where it is, and how people might come into contact with it. ADPH does not collect and analyze environmental samples, but, instead, reviews sampling data provided by EPA, other government agencies, businesses, or the public. When there is not enough environmental information available, the assessment will indicate that further sampling data are needed.

**Health Effects:** If the review of the environmental data shows that people have or could come into contact with hazardous substances, ADPH scientists evaluate whether that exposure may result in harmful effects. ADPH, as well as ATSDR, recognizes that children, because of their play activities and their smaller body size, may be most susceptible to these effects. As a policy, unless data are available to suggest otherwise, ADPH health professionals responsible for assessing effects in populations consider children to be more sensitive and vulnerable to hazardous substances. Thus, the health impact to children is considered first when evaluating the health threat to a community. The health impact to other high risk groups within the community (i.e., elderly, those with compromised immune systems, chronically ill, women of child-bearing age, and people engaging in high risk practices) also receive special attention during the evaluation.

ADPH uses existing scientific information that can include the results of medical, toxicological, and epidemiologic studies and disease registry data to determine the health effects that may result from exposure. The science of environmental health is still developing, and sometimes scientific information on the health effects of certain substances may not be available. In such cases, the report will document the need for further data collection activities.

**Conclusions:** The report assigns a public health hazard category and describes any hazards at the site. It contains a public health action plan that recommends ways to stop or reduce exposure.

Because ATSDR and ADPH are advisory agencies, the report may identify actions that are appropriate for EPA, other responsible parties, or the research or education divisions of ATSDR to conduct. However, if there is an urgent public health hazard, a public health advisory to warn people of the danger can be issued. When appropriate, ATSDR also authorizes health education or pilot studies of health effects, full-scale epidemiology studies, diseases registries, surveillance studies, or research on specific hazardous substances.

**Interactive Process:** The development of a health assessment is an interactive process. The approach requires accumulation of information from many sources, including, but not limited to: ATSDR; many city, state, and federal agencies; the companies responsible for cleaning up the site, the parties that may have caused the contamination, and the community. Once an assessment has been completed, the conclusions are shared with all interested parties. These parties are asked to comment on an early draft of the report to make sure the data they provided are presented correctly and responsibly. Sometimes agencies will begin to carry out recommendations when they read the draft conclusions and recommendations.

**Community:** ADPH needs to determine what people in the area know about the site and what health concerns they may have about the site. Therefore, ADPH gathers information and comments from the public. The public is broadly defined to include people who live or work nearby, property owners, business owners, civic leaders, health professionals, community groups, and anyone else who is interested or concerned. The public is asked to comment on a draft of the report to ensure that the report addresses their health concerns. The final report contains a written response to public comments.

**Comments:** : If you have questions or comments after reading this report, please send them to the Alabama Department of Public Health, 201 Monroe Street, Suite 1470, Montgomery, Alabama 36104.

## **List of Acronyms and Abbreviations**

ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CREG	Cancer Risk Evaluation Guide
EMEG	Environmental Media Evaluation Guides
EPA	U.S. Environmental Protection Agency
LTHA	Lifetime Health Advisory for Drinking Water
MCLG	Maximum Contaminant Level Goal
RCRA	Resource Conservation and Recovery Act
RMEG	Reference Dose Media Evaluation Guide

## **Summary and Statement of Issues**

In a letter dated July 23, 2004, the Alabama Department of Environmental Management (ADEM) requested that the Alabama Department of Public Health (ADPH) review a revised Remediation Report generated by TTL, Inc (TTL). TTL was contracted by Renaissance Development, LLC to investigate potential environmental concerns at Temerson Square Lots 1, 2, and 3 (Temerson Square). TTL was also retained to oversee and document the environmental cleanup at the site. The Temerson Square site included abandoned building slabs on Lot 1, and the former Sable Steel warehouse on Lots 2 and 3. This property had been entered in the Alabama Voluntary Cleanup Program.

The original report stated that the intent of the purchaser was to erect office buildings and cap the remainder of the site with parking lots. In the revised report the purchaser states that the site will be used for a mixed-use (commercial/residential) development.

ADPH was asked to review the revised Remediation Report from a public health prospective and to submit comments.

### **Background**

Temerson Square, Lots 1, 2, and 3 is located between 21<sup>st</sup> and 22<sup>nd</sup> Avenues on 4<sup>th</sup> Street in downtown Tuscaloosa, Alabama. The site is comprised of three lots and includes abandoned building slabs on Lot 1 and the former Sabel Steel warehouse facility on Lots 2 and 3. Previously, the site was reportedly a leather tannery and a salvage yard [1].

The southern boundary of the site houses businesses that include Druid Auto Parts, Morgenthau Gates Cleaners, and Weatherford Printing [1].

The Temerson Square site is being developed through the Alabama Brownfields program and has been entered into the Alabama Department of Environmental Management's (ADEM) Voluntary Cleanup Program. A Remediation Report generated in October 2002 stated that the intent of the purchaser of the site was to build an office building or buildings and cap the remainder of the site with parking lots. Clean-up of this site, based on the original proposal, was accomplished from March 2002 through August 2002 [2].

A Modified Remediation Report (July 2004) was developed to assess the site for a mixed-use (commercial/residential) development [2].

### **Discussion**

The Temerson Square site is located in downtown Tuscaloosa and is serviced by the city water system. Tuscaloosa obtains its water from surface water sources upstream of the site.

A well survey was performed in 1990 for Tuscaloosa County. According to the survey, there are no users of groundwater for drinking near the site. There are no municipal or public supply

wells within a four mile radius of the site. An industrial supply well for Elk Roofing is located approximately two miles west of the site [2].

In a September 2000 groundwater sampling event, volatile organic compounds (VOCs) were discovered. It was determined that the source of contaminants in the groundwater is not from previous operations at the site and is likely from an off-site source because the groundwater has not been impacted from the metals in the soil at this site and the only VOC detected in the soil at the site was methylene chloride which is believed to be a laboratory contaminant. None of the groundwater contaminants exceeded ATSDR comparison values [1, 2].

An initial assessment of the site was performed by TTL and was presented to ADEM in May 2001. This assessment included visual observations and results of soil/debris and groundwater analyses at the site. An underground storage tank was also identified. Sampling performed during this assessment revealed the presence of metals in the soil and volatile organic compounds (VOCs) in the groundwater collected from the monitoring wells.

TTL's plan to remove the underground storage tank and "cap-in-place" soil that was not required to be removed was approved by ADEM in October 2001. As part of the site preparation, a section of the site would be capped with cleaned soil so that soil that contains chemicals exceeding screening levels would remain in-place with excavation restrictions. Ultimately, the capped area would be covered by paved parking lots and building foundations. Excavation in the capped area would remain restricted without prior notification to ADEM.

In a January 2001 groundwater sampling event, six VOCs were detected. These included tetrachloroethylene, trichloroethylene, cis,1-2 dichloroethene, chloroform, 1,2,4-trimethylbenzene, and m,p,o-xylenes. Lead was also detected slightly above comparison values in the ground water samples [2]. Those chemicals with concentrations exceeding ATSDR's comparison value are retained as contaminants of concern and are listed in Table 1.

Table 1. Groundwater Sampling Analysis

Sampling date	Substance	Max. conc. (mg/L)	Location	Comp. Value (ppm)	Reference
	VOCs				
1/31/2001	Tetrachloroethene ( PCE)	0.465	mw-6	.005	MCL
2/1/2001	Trichloroethene (TCE)	0.087	mw-1	.005	MCL
	Metals				
2/1/2001	Lead	0.016	mw-3	0.015	EPA action level

mg/L – milligrams per liter  
ppm – parts per million = mg/L

Soil samples were collected from the drilling cuttings of seven monitoring wells that were placed on and surrounding the site. Soil sampling results indicated the presence of arsenic above comparison values and slightly above background levels (as discussed below). Substances retained as contaminants of concern from the soil analysis and comparison values are listed in the following table.

Table 2. Soil Sampling Analysis

Sampling date	Substance	Max. conc. (mg/kg)	Comp. Value	Reference
7/08/02	Total Arsenic	6.9	0.5 ppm	CREG
6/24/2002	Total Petroleum Hydrocarbons (TPH)	23.1	Not listed	

mg/kg – milligrams per kilogram  
 ppm – parts per million = mg/kg

### Exposure pathway

#### *What does exposure mean?*

ADPH public health consultations focus on the potential for human exposure, or in other words, contact with environmental contaminants. Chemical contaminants released into the environment have the potential to cause adverse health effects. That said, however, *a release does not always result in human exposure*. People can only be exposed to a contaminant if they come in contact with it—that is, if they breathe, eat, drink, or come into dermal (skin) contact with a substance containing the contaminant.

#### *How does ADPH determine which exposure situations to evaluate?*

ADPH evaluates site conditions to determine if people could have been, are currently, or could in the future be exposed (i.e., exposed in a past scenario, a current scenario, or a future scenario) to site-related contaminants. This evaluation identifies whether through ingestion, dermal contact, or inhalation exposure to contaminated media (soil, sediment, water, air, or biota) has occurred, is occurring, or will occur.

To determine whether people are exposed to contaminants, the environmental and human components that lead to exposure were evaluated. This exposure pathway analysis considers five elements: the source of contamination; the movement of the contaminants in soil, air or water; the point at which people can come in contact with the contaminants; the routes of exposure (such as drinking contaminated water); and the population that can potentially be exposed. All five elements must be present for an exposure pathway to be complete.

Exposure pathways are classified as a completed pathway, a potential pathway, or an eliminated pathway. If a pathway is complete, exposure is reasonably likely to have occurred in the past, is currently occurring, or is likely to occur in the future. If a potential pathway exists, exposure might have occurred, may be occurring, or may yet occur. A pathway is eliminated from further analysis when one of the five elements is missing and will never be present, or when no contaminant of concern can be identified.

If exposure was, is, or could be possible, ADPH considers whether the exposure-causing contamination is present at levels that might affect public health. ADPH scientists select contaminants for further evaluation by comparing them against health-based comparison values (CVs). These are developed from available scientific literature related to exposure and health effects. CVs are derived for each of the various media and reflect an estimated contaminant concentration that is *not expected* to cause adverse health effects for a given chemical, assuming

a standard daily contact rate (e.g., an amount of water or soil consumed or an amount of air breathed) and body weight.

*CVs are not thresholds for adverse health effects.* CVs establish contaminant concentrations many times lower than levels at which no effects were observed in experimental animals or in human epidemiologic studies. If contaminant concentrations are above CVs, ADPH further analyzes exposure variables (for example, duration and frequency of exposure), the toxicology of the contaminant, other epidemiology studies, and the weight of evidence for health effects.

***If someone is exposed, will they get sick?***

*Exposure does not always result in harmful health effects.* The type and severity of health effects a person can experience because of contact with a contaminant depend on the exposure concentration (how much), the frequency or duration of exposure (how long), the route or pathway of exposure (breathing, eating, drinking, or dermal contact), and the multiplicity of exposure (combination of contaminants). Once exposure occurs, characteristics such as a person's age, sex, nutritional status, genetics, lifestyle, and health status influence how they absorb, distribute, metabolize, and excrete the contaminant. Together, these factors and characteristics determine the health effects that could occur.

In almost any situation, the true level of exposure to environmental contamination involves considerable uncertainty. To account for this uncertainty and to be protective of public health, the evaluation typically includes worst-case exposure level estimates as the basis for determining whether adverse health effects are possible. These estimated exposure levels are usually much higher than the levels to which people are actually exposed. If the exposure levels indicate that adverse health effects are possible, ADPH performs a more detailed review of exposure, also consulting toxicologic and epidemiologic literature for scientific information about the health effects from exposure to hazardous substances.

Chemical substances found at this site exceeding comparison values were: tetrachloroethene (PCE), trichloroethene (TCE), and total petroleum hydrocarbons (TPH) in groundwater; and, lead and arsenic in soil. This evaluation determined that exposures are unlikely for two reasons. First, groundwater under the site is not used so that exposure to any contaminants in this water will not occur. Second, plans call for any areas of contaminated soil be covered which will eliminate the possibility of exposure. However, as a prudent and conservative public health protection measure, ADPH analyzed multiple exposure pathway scenarios for groundwater and soil at this site.

**Soil Pathway**

Arsenic and TPH were found in the soil at this site at levels that exceed comparison values.

In addition to artificial sources, arsenic occurs naturally in soil and minerals and may enter the air, water, and land from wind blown dust. Arsenic may get into water from runoff and leaching.

Background soil samples were collected from an off-site location. The background soil samples

showed arsenic in the soil at concentrations of 2.04 and 1.48 mg/kg (milligrams per kilogram) at 0 to 1 foot below ground surface and 2 to 3 feet below ground surface, respectively. Although the arsenic levels do not greatly exceed the comparison value, based on the “background” arsenic concentrations in the vicinity of the site, arsenic concentrations on-site exceed remedial goals for residential land use. For the remediation goal, ADEM uses an EPA initial screening level of 3.8 mg/kg [1,2].

Total petroleum hydrocarbons (TPH) is a term used to describe a large family of several hundred chemical compounds that are derived from crude oil. Crude oil is used to make petroleum products, which can contaminate the environment. Some chemicals that make up TPH are hexane, jet fuels, mineral oils, benzene, toluene, xylenes, and naphthalene, as well as other petroleum products and gasoline components.

An underground storage tank (UST) was removed from this site. Soil sampling in the pit showed the presence of TPH, but at a level that was below the detection limit of 10 ppm. The detection limit is the minimum concentration of a chemical that can be distinguished from a zero concentration.

Temerson Square was an industrial site. Remediation activities at this site included removal and disposal of contaminated soil. Soil that was not removed from this site will be capped (covered) by building foundations and paved parking. Additionally, excavation restrictions were placed on the site. This will serve to limit the potential exposure by eliminating the likelihood that contaminated soil will be uncovered in the future.

Exposure to soil by workers at this site would have been incidental. Because of the low levels of contaminant and because it is likely that any contact by the public will be infrequent and of short duration, ADPH determines that no public health hazard exist from soil at this site. Development restrictions and oversight by ADEM will ensure that future exposures do not occur.

### **Groundwater Pathway**

Chemical substances found at this site exceeding comparison values were PCE, TCE, lead, arsenic, and total petroleum hydrocarbons. Concentrations detected in the environment at or above this level are not necessarily hazardous to public health but warrant further evaluation. If the exposure is infrequent and at low levels, or if there is no exposure, there is no public health hazard.

Although PCE, TCE and lead were found in the groundwater at this site, there are no potable drinking water outlets on the site or within four miles. No completed pathway to groundwater contaminants exist at this site. ADPH determined that no public health hazard exist from groundwater at this site.

### **Vapor Intrusion**

Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can

emit vapors that may migrate through subsurface soils and into indoor air spaces of overlying buildings.

Although PCE and TCE were detected in the groundwater at this site, the groundwater is greater than 40 feet below the surface of the land. The soil at this site was not contaminated with PCE or TCE which would happen if these chemicals were migrating upward through the soil. Additionally, one of the wells was off-site and the other is located in an area that is proposed to be used for parking. No completed pathway to groundwater contaminants via vapor intrusion should exist at this site.

### **Community Health Concerns**

ADPH is not aware of any citizens being actively involved at this site and of any community concerns.

### **Conclusions**

The development plan for the Temerson Square site included capping soil that showed metal concentrations exceeding the industrial screening levels with clean soil. The capped area would then be paved for parking lots. The remainder of the site would be covered by asphalt parking or building foundation. Excavation restrictions have also been placed on the site.

The pathway analysis indicates that no one has or will likely be exposed to contaminants in the soil or groundwater at this site. The contaminant occurs at a fairly deep level below ground, decreasing the likelihood that contaminant vapor will reach a level where it could intrude into buildings. Also, vapor intrusion should not be an issue because no buildings should be placed over the areas of highest concentration of groundwater or soil contaminants.

The description of the property and its proposed uses does not indicate that any individual would come into contact with contaminants present on the site. No completed pathways exist and no public health hazards exist at this site.

### **Recommendations**

ADPH recommends adherence to excavation restrictions at this site. ADEM should monitor development activity to ensure adherence to excavation and use restrictions.

Notification to ADEM and ADPH should be done and approval obtained before digging at this site.

Workers at this site should have proper OSHA training and should follow applicable OSHA guidelines including "Construction Best Management Practices" to prevent the possibility of exposure during construction at the site.

## **Public Health Action Plan**

ADPH will continue to work with EPA and ADEM to review sampling data.

ADEM and ADPH will evaluate any plans for construction to ensure that such exposure to contaminants does not occur.

## **Preparer of Report**

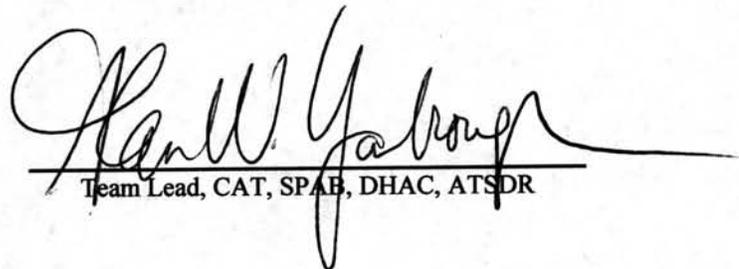
Phyllis Mardis  
Public Health Senior Environmentalist  
Alabama Department of Public Health

**Certification**

This Temerson Square Public Health Consultation was prepared by the Alabama Department of Public Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodologies and procedures existing at the time the health consultation was initiated.

  
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Technical Project Officer, CAT, SPAB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.

  
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Team Lead, CAT, SPAB, DHAC, ATSDR

## References

1. Environmental Site Assessment; Temerson Square Lots 1,2,&3. Renaissance Development, LLC; Tuscaloosa, Alabama; May 24, 2001.
2. Remediation Report under the ADEM Brownfield Redevelopment and Voluntary Cleanup Program; ADEM Site Number 461-9280; Renaissance Development, LLC; Tuscaloosa, Alabama; October 2002 (Revised July 2004).
3. Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological Profile for total petroleum hydrocarbons (TPH). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.