

# **Health Consultation**

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**Outdoor Air Testing**

**ALARIC INCORPORATED**

**TAMPA, HILLSBOROUGH COUNTY, FLORIDA**

**EPA FACILITY ID: FLD012978862**

**JUNE 6, 2006**

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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EPA FACILITY ID: FLD012978862

Prepared By:

Florida Department of Health  
Bureau of Community Environmental Health  
Under Cooperative Agreement with the  
U.S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry

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## Foreword

This health consultation report evaluates the U.S. Environmental Protection Agency's (EPA) volatile organic compound (VOC) air sampling testing results of outdoor air samples collected near the Alaric site in Tampa, Florida in June, August and September 2005.

*Evaluating exposure:* Florida Department of Health (FDOH) scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out how much contamination is present, where it is on the site, and how people might be exposed to it. Usually, Florida DOH does not collect its own environmental sampling data. We rely on information provided by the Florida Department of Environmental Protection (DEP), the U.S. Environmental Protection Agency (USEPA), and other government agencies, businesses, and the public.

*Evaluating health effects:* If evidence is found that people are being exposed—or could be exposed—to hazardous substances, Florida DOH scientists will take steps to determine whether that exposure could be harmful to human health. Their assessment focuses on public health; that is, the health impact on the community as a whole, and is based on existing scientific information.

*Developing recommendations:* In an evaluation report—such as this exposure investigation report—Florida DOH outlines its conclusions regarding any potential health threat posed by a site, and offers recommendations for reducing or eliminating human exposure to contaminants. The role of Florida DOH in dealing with hazardous waste sites is primarily advisory. For that reason the evaluation report will typically recommend actions to be taken by other agencies—including the EPA and Florida DEP. If, however, the health threat is immediate, Florida DOH will issue a public health advisory warning people of the danger and will work to resolve the problem.

*Soliciting community input:* The evaluation process is interactive. Florida DOH starts by soliciting and evaluating information from various government agencies, the organizations or individuals responsible for cleaning up the site, and from community members who live near the site. Any conclusions are shared with the organizations and individuals who provided information. Once an evaluation report has been prepared, Florida DOH seeks feedback from the public. *If you have questions or comments about this exposure investigation report, we encourage you to contact us. Please write to:*

*Please write to:* Susan Skye / Health Assessment Team  
Bureau of Community Environmental Health  
Florida Department of Health  
4052 Bald Cypress Way, Bin # A-08  
Tallahassee, FL 32399-1712

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## **Summary and Statement of Issues**

This health consultation evaluates volatile organic compound (VOC) air testing results collected in June, August and September 2005 by the U.S. Environmental Protection Agency (EPA) near the Alaric site in Hillsborough County, Tampa, Florida.

Since the early 1970s, the Alaric site has been occupied by several businesses including Concrete Equipment and Supply, a plastic recycling company and Dana Marine Labs. Currently, an aluminum enclosure facility occupies the property.

From 1992 through 2003, the U.S. EPA investigated soil and groundwater contamination on the Alaric site. In May 2003, EPA's contractors installed a groundwater treatment system on-site. This system is still in operation.

In 2005, a nearby resident requested outdoor air testing. Both she and her husband were experiencing health symptoms/illnesses she claimed were related to breathing chemicals from the operation of the groundwater treatment system.

The Florida DOH determined levels of VOCs from June, August and September 2005 in the air near the Alaric site are not likely to cause illness

## **Purpose and Health Issues**

In 2005 the U.S. EPA asked the Florida DOH to evaluate the VOC air data they collected to see if the levels were a health concern. The nearby resident expressed concern that the contaminants and particulates from the cleanup activities at the site could exacerbate her husband's heart condition. She also told EPA she and her son had health issues that worsened from breathing air near the treatment system on-site.

## **Background**

### **Site Description and History**

The Alaric site is at 2110 N. 71st Street, in the Orient Park area of Tampa, Hillsborough County. The property is approximately 1.72 acres in an urban area with mixed commercial and private properties (Figures 1 and 2). Immediately east of the site is Helena Chemical Co. (HCC). From 1967 to 1981, Helena Chemical Company produced wet dusting sulfur and formulated pesticides, herbicides, fungicides, and liquid and dry fertilizers. The production and handling of pesticides have since ceased at this site and the focus of HCC today is dry and liquid fertilizers (FDEP, 1998). A CSX rail-line forms the southern border of the HCC property. A company that refurbishes pay telephones is to the northwest. A trucking company is immediately to the north, and a wood crafting business is to the west. Stauffer Management company, Wheelblast and Singleton Battery company and Gulf Coast Recycling are south of the rail-line (Figure 2).

The Alaric site has been occupied by several businesses since the early 1970s. Operations of one of the tenants, Concrete Equipment Supply (CES) are believed to have caused the release of significant quantities of degreasers, including tetrachloroethylene (PCE) and trichloroethylene (TCE). Parts cleaning reportedly were conducted on the southern and western sides of the building. Although no records were found showing that CES used PCE- or TCE-containing degreasing agents, soil samples indicated the presence of two source areas with high concentrations of PCE and TCE.

Before 1973, the site and surrounding areas were vacant lots and oak trees. From historic photos, the building on the site first appears between 1972 and 1976. Historic reports show that from 1973 to 1981, Concrete Equipment and Supply (CES) occupied the property. CES built, repaired, and refinished concrete mixing equipment. The Florida Department of Environmental Protection (FDEP) reported that CES used degreasing and cleaning agents. However, the Florida DEP did not determine the nature of the solvents used. Neighboring businesses reported that CES conducted the cleaning operations on unpaved areas on the south and west sides of the property.

From 1981 to 1986, two businesses shared the site and the building. Alaric Inc. recycled plastics and made special acrylic coatings and synthetic marble. The distillation procedure that Alaric Incorporated used required large amounts of water, which the on-site production well supplied. Dana Marine Labs packaged and distributed marine varnishes and lacquers. Use of chlorinated solvents was not associated with either of these operations. Currently, an aluminum enclosure facility occupies the property.

In 1986, Alaric Incorporated prepared a site management plan as part of its application for a small quantity generator permit. In response, the Hillsborough County Health Department (HCHD) tested the on-site supply well. HCHD detected chlorinated solvents at concentrations that exceed the acceptable groundwater standards. After discovering groundwater contamination at the Alaric site and contamination one-third of a mile to the west from another site, the City of Tampa extended municipal water service to the area. In addition, the owner of Alaric Incorporated closed the on-site well. Several potential sources for the contamination exist in the area. As stated, for eight years CES conducted degreasing operations on the property. However, since FDEP could not determine the makeup of the solvents used, CES cannot be named as the definitive source. Flag Sulfur, which previously occupied the HCC property, reportedly used chlorinated solvents in the production of pesticides. In addition, FDEP detected chlorinated solvents in the soil of several of the businesses surrounding the Alaric site (FDEP 1998).

In 1998, Florida DEP's contractor completed a contamination assessment of the Alaric site. They determined the source of contamination and delineated the vertical and horizontal extent of soil and groundwater contamination, both on and off the site (FDEP 1998). Contractors collected sub-surface soil samples, surficial aquifer samples, and both shallow and deep Floridan aquifer samples.

In the late 1990s, the Florida DEP began investigating a groundwater contamination plume several acres in size. The plume also appeared to migrate onto an adjacent property, the HCC site, where releases of pesticides, benzene, toluene, ethyl benzene and xylene, as well as molten sulfur contaminated the soil and groundwater. Due to the apparent co-mingling of plumes, the problems associated with the Alaric site were referred to the U.S. EPA by the Florida DEP (EPA 2004).

In 1999, EPA began a remedial investigation/feasibility study (RI/FS) to further characterize the nature and extent of soil and groundwater contamination and determine a remedy. They collected soil and groundwater sampling. Sampling of soil and groundwater indicated the presence of

significant quantities of PCE and TCE in soil samples extending from about 8- to-13 feet below land surface (bls), along the top of the Hawthorne Formation, a clay layer. This distribution of contaminants suggests residual amounts of dense non-aqueous phase liquids. Groundwater samples collected in 1999 indicated that the plume had spread significantly since 1997. The plume appeared to be spreading rapidly in both the surficial and upper portions of the Floridian aquifer (EPA 2004).

On October 19, 1999, the Florida DOH visited the Alaric site and the surrounding area. They observed the site among several small businesses and the HCC property. The northern area of the site was cleared for parking. An intact fence surrounded the property. Driving through the area, they observed the southern edge of the Orient Park residential area more than 500 feet to the north. Because of the commercial/industrial nature of the immediate area and the presence of an intact fence, the Florida DOH concluded that trespass on the Alaric site is unlikely (FDOH 2001)

In May 2001, the Florida DOH/ATSDR published a public health assessment report evaluating soil and groundwater data collected from 1988 to 1998. They concluded that the Alaric site poses no public health hazard because no completed exposure pathways exist for this site (FDOH 2001).

In January 2001, a concerned resident living 0.2 miles from the site requested Florida DOH evaluate the potential for hazardous conditions during EPA's cleanup operations at the site. The resident was concerned that contaminants and particulates from the cleanup activities could exacerbate her husband's heart condition.

In February 2001, Florida DOH sent a letter to EPA regarding the health concerns of the resident who lives near the site. After evaluating VOCs (specifically PCE) in soil and groundwater data and estimating possible VOCs in air, Florida DOH concluded that there are no health risks to the nearby residents. They also concluded that relocation was not necessary.

In July 2002, the U.S. EPA issued an Interim Action Record of Decision (IAROD). The remedy selected had three components: 1) removal of the shallow soil contamination and septic tank; 2) treatment of the deeper subsurface soils through chemical oxidation; and 3) treatment of the surficial and intermediate aquifer groundwater by pumping and treating.

In May 2003, the U.S. EPA completed removal of the shallow contaminated soil and septic tank. The septic system was believed to be the main source of the chlorinated solvents. The results of the sidewall sampling from the excavation phase indicated that an area underneath the concrete slab behind the Alaric building might also have significant concentrations of chlorinated solvents. This area may have been used for intermittent disposal of waste products (EPA 2004).



## Demographics

Based on the 2000 census, approximately 5192 people reside within one mile of the Alaric Inc., site. Of this population, 50% are white, 30 % are black and 20% are Hispanic or from other racial/ethnic groups (Census 2000).

## Community Health Concerns

In January 2001, a concerned resident living 0.2 miles from the site requested that Florida DOH evaluate the potential for hazardous conditions during EPA's cleanup operations at the site. The resident expressed concern that the contaminants and particulates from the cleanup activities at the site could exacerbate her husband's heart condition.

This resident and her family have lived near the Alaric site since 1983. In August 2005 the same concerned resident complained of fatigue, light-headedness, coughing up phlegm, breathing problems and needing an inhaler to breath. Her son and husband also have health problems. Her husband is on oxygen and her son has asthma. The resident claims when EPA stops the ground water treatment system, their health improves.

## Discussion

For this health consultation, the concerned resident expressed health concerns about breathing VOCs in the air from the Alaric treatment system on-site. Air is the completed exposure pathway that will be evaluated in this health consultation.

## Groundwater Treatment System and Air Stripper Background

In October 2003, the U.S. EPA's contractor installed a groundwater treatment system at the site. The system consists of three parts: 1) a shallow groundwater recovery and treatment (GR&T) system using well eductors, 2) a permanganate injection system, and 3) an intermediate GR&T system. Originally, a tray stripper treated the surficial groundwater. The unit was sized with an extra tray and operated up to 90 gallons per minute (gpm) (EPA 2004).

The U.S. EPA's contractor also added an air stripper to the GR&T system. EPA installed the air stripper to reduce effluent concentrations of vinyl chloride, iron, total dissolved solids, and manganese that were elevated in the original system. A 3-tray polyethylene tray air stripper capable of 25 gallons per minute was added in April 2005 to treat the influent intermediate groundwater.

To ensure safe air emissions, in 2005, EPA's contractor installed carbon filters on the shallow and intermediate groundwater recovery and treatment systems. This modification resulted in a 99.91% reduction of the previous air emissions, with only the vinyl chloride being treated through the air stripper. After this modification, the system was re-sampled on August 31 and September 1, 2005. In addition, carbon has been replaced because influent groundwater sampling confirmed that the carbon units for both the shallow and intermediate systems have breakthrough. After replacement of the carbon, the U. S. EPA expected exhaust air emissions to be less than 0.025 lb/day (the Florida DEP acceptable limit is 13.7 lb/day). The post carbon treatment system exhaust stack is 18 feet tall and 4 inches wide.

## **Air Testing Background and Collection**

On June 20 and 21 2005, EPA conducted outdoor air testing from five locations near the Alaric Inc. site (Figure 2).

The five locations were as follows:

ALA-1: an upwind site/meteorological station, approximately 1000 yards southwest of the Alaric site

ALA-2: approximately 1000 yards west of the Alaric site; intersection of East Jewell and North 64<sup>th</sup> Streets

ALA-3: residence on Orient Road

ALA-4 and ALA-5: duplicate site adjacent to the Alaric building

On June 20, 2005 the wind was primarily out of the northeast with an average speed of 5 miles per hour. On June 21, 2005, the wind was primarily out of the south to southwest with an average speed of 3 miles per hour. On both sampling days, the air samples were collected from approximately 7:00 a.m. to 7:00 a.m. the next day. The VOC air samples were collected for 24 hours in evacuated six-liter Summa stainless steel canisters and were sent to EPA's lab in Athens, Georgia. Using EPA Method Science and Ecosystems Support Division modified Total Organic (TO-15) method, the EPA lab tested the air for 1,1-dichloroethane, cis-1,2-dichloroethane, tetrachloroethylene (PCE), trans-1,2-dichloroethene, trichloroethylene (TCE), and vinyl chloride (Table 1). EPA selected these VOCs because these chemicals were previously found in ground water from the site. EPA used an Entech auto-sampler and concentrator interfaced to a Hewlett-Packard gas chromatograph and mass spectrometer to analyze the samples.

On August 30-31 and August 31-September 1, 2005, EPA collected ten 24-hour outdoor air samples from the five air monitoring locations (ALA-1 to ALA-5 as listed above) (Figure 3). EPA also collected two air samples inside the carbon exhaust stack on-site ALA-6 (Figure 3). EPA's Athens Lab analyzed all ten samples for tetrachloroethylene (PCE), trichloroethylene (TCE), cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane, and vinyl chloride.

EPA conducted air testing for VOCs from August 30, 2005 at approximately 4:30 PM through August 31, 2005 at approximately 3:30 PM. Winds were predominately from the WSW at an average speed of 7 miles per hour with thunderstorms in the afternoon.

EPA conducted air testing for VOCs again on August 31, 2005 at approximately 3:30 PM and ended on September 1, 2005 at approximately 3:00 PM. Winds were light and variable at speeds of 0-4 miles per hour.

## **Air Testing Results**

In June 2005, tetrachloroethylene was the only chemical detected in the air. The Florida DOH compared the maximum level of tetrachloroethylene ( $2.3 \mu\text{g}/\text{m}^3$ ) with ATSDR's air comparison value. For chronic inhalation exposure ( $\geq 365$  days), the detected tetrachloroethylene was 118 times less than the comparison value. For acute inhalation exposure ( $\leq 14$  days), the detected tetrachloroethylene level was 589 times less than the comparison value.

In August 2005, the Florida DOH mailed a letter to the EPA stating the levels of VOCs tested in June 2005 were not likely to cause illness. The Florida DOH did however recommend further outdoor 24-hour air testing for additional VOCs (including those possibly emitted from nearby facilities i.e. Helena Chemical and Gulf Coast Metals). Florida DOH also recommended EPA conduct VOC indoor air testing in a resident's home if necessary.

On August 30, 2005, tetrachloroethylene was detected at sites ALA-4 and ALA-5. Vinyl chloride, 1,1-dichloroethane, cis-1,2-dichloroethane, trans-1,2-dichloroethane, trans-1,2-dichloroethene, trichloroethene, and tetrachloroethylene were detected in a grab sample taken at ALA-6 (exhaust stack) on August 31, 2005 at 10:06 AM (Table 2).

On August 31 and September 1, 2005 tetrachloroethylene was detected at all locations. Vinyl chloride, 1,1-dichloroethane, cis-1,2-dichloroethane, trans-1,2-dichloroethane, trans-1,2-dichloroethene, trichloroethene, and tetrachloroethylene were detected in a grab sample taken at ALA-6 (exhaust stack) on September 1, 2005 at 2:25 PM.

In August/September, tetrachloroethylene was the only chemical detected within a breathing zone. The Florida DOH compared the maximum level of tetrachloroethylene ( $2.6 \mu\text{g}/\text{m}^3$ ) with ATSDR's air comparison value. For chronic inhalation exposure ( $\geq 365$  days), the detected tetrachloroethylene was 104 times less than the comparison value. For acute inhalation exposure ( $\leq 14$  days), the detected tetrachloroethylene level was 521 times less than the comparison value.

In December 2005, the Florida DOH sent a letter to the concerned resident stating that the VOC in the air in August and September 2005 are not likely to cause illness.

From the June, August and September air testing, the only VOCs detected above a level of concern were from the grab air samples collected inside of the groundwater treatment system exhaust stack on-site. The levels detected inside the stack are not levels that residents breathe. All of the other samples, including two samples EPA collected inside the fenced compound adjacent to the Alaric remediation site building, did not detect VOCs at levels of concern. The most likely place for breathing the highest levels of VOCs would be closest to the exhaust stack. During both the June and August/September sampling events, EPA collected two samples within ten feet of this stack. The sample detected tetrachloroethylene, however the levels are below ATSDR's air comparison values. Because all samples outside the stack from all locations did not detect VOCs above the level of concern, they are not likely to cause symptoms or illness. Since the outdoor VOC air levels were not a concern, the Florida DOH did not pursue indoor air testing in any of the residents' homes.

### **Child Health Considerations**

Children **may be** more sensitive to the effects of VOCs than are adults. Little information exists on how VOCs differ in their effects between children and adults (ATSDR 1997). Children drink more fluids, eat more food, and breathe more air per kilogram of body weight than do adults. Children have a larger skin surface in proportion to their body volume. A child's diet—that often differs from that of an adult's—and a child's behavior and lifestyle can also influence exposure. Children, especially small children, are closer to the ground than are adults. They crawl on the floor, put things in their mouths, and might ingest inappropriate items such as dirt or paint chips.

Children also spend more time outdoors than do adults. Finally and perhaps most importantly, children do not have the judgment of adults for avoiding hazards (ATSDR 1997). 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.

Based on the levels of VOCs detected outside of the exhaust stack on-site, VOCs from the Alaric groundwater treatment system are not likely to cause illness in children.

### **Conclusions**

The Florida DOH determined levels of VOCs from June, August and September 2005 in the air near the Alaric site are not likely to cause illness. Therefore, this site is a no current apparent public health hazard.

### **Recommendations**

The Florida DOH recommends EPA continue periodic testing of both the air stripper and carbon stack. If this testing shows an increase in contaminant levels, further air testing around nearby homes may be warranted.

The Florida DOH will evaluate future environmental data including air data as necessary.

### **Public Health Action Plan**

#### ***Past Actions:***

In February 2001, Florida DOH sent a letter to EPA regarding the health concerns of the resident who lives near the site. After evaluating VOCs (specifically PCE) in soil, groundwater data and estimating possible VOCs in air, Florida DOH concluded that there are no health risks to the nearby residents. They also concluded that relocation was not necessary.

In May 2001, the Florida DOH/ATSDR published a public health assessment report evaluating soil and groundwater data collected from 1988 to 1998. They concluded that the Alaric site is a no public health hazard because no completed exposure pathways exist for this site (FDOH 2001).

#### ***Planned Actions:***

If EPA conducts air testing in the future, the Florida DOH will review these data and make recommendations.

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[EPA]<sup>1</sup> Environmental Protection Agency. 2005. Results of June 2005 Air Monitoring – Alaric Area Groundwater Plume Site dated July 2005.

[EPA]<sup>2</sup> Environmental Protection Agency. 2005. Air Study Results from August 30-September 1, 2005– Alaric Area Groundwater Plume Site dated September 2005.

[EPA] Environmental Protection Agency. 2004. Florida NPL/NPL Caliber Cleanup Site Summaries - Alaric Area Groundwater Plume  
<http://www.epa.gov/region4/waste/npl/nplfls/alaricfl.htm>. Last visited February 16, 2006.

## **Appendix A. Figures and Tables**

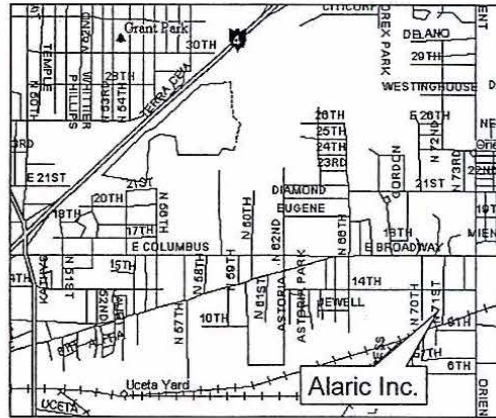


FIGURE 1. SITE LOCATION IN FLORIDA







**TABLE 1**  
**Alaric Groundwater Plume, Tampa, Florida**  
**Ambient Air Study**  
**June 20-22, 2005**

**DAY 1: June 20-21, 2005**

COMPOUND	UNITS	MONITORING SITES				
		ALA1	ALA2	ALA3	ALA4	ALA5
1,1-Dichloroethane	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
Tetrachloroethene (Tetrachloroethylene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
Trichloroethene (Trichloroethylene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
Vinyl Chloride	µg/m <sup>3</sup>	ND	ND	ND	ND	ND

**DAY 2: June 21-22, 2005**

COMPOUND	UNITS	MONITORING SITES				
		ALA1	ALA2	ALA3	ALA4	ALA5
1,1-Dichloroethane	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
<b>Tetrachloroethene (Tetrachloroethylene)</b>	µg/m <sup>3</sup>	ND	ND	<b>2.3</b>	<b>1 J</b>	<b>0.96 AJ</b>
trans-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
Trichloroethene (Trichloroethylene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND
Vinyl Chloride	µg/m <sup>3</sup>	ND	ND	ND	ND	ND

ALA-1: upwind Site/meteorological station, approximately 1000 yards southwest of Alaric Inc.

ALA-2: approximately 1000 yards west of Alaric Inc; intersection of East Jewell and North 64<sup>th</sup> Streets

ALA-3: residence on Orient Road

ALA-4, ALA-5: duplicate site adjacent to Alaric building

ND= not-detected at or above the reporting limit

J= reported value is an estimate

A= analyte analyzed in replicate – reported value is an average of replicates

µg/m<sup>3</sup> = micrograms per cubic meter

Source: (EPA 2005)<sup>1</sup>

**TABLE 2**  
**Alaric Groundwater Plume, Tampa, Florida**  
**Ambient Air Study**  
**August/September 2005**

**DAY 1: August 30 – 31, 2005**

COMPOUND	UNITS	MONITORING SITES					
		ALA-1	ALA-2	ALA-3	ALA-4	ALA-5	ALA-6
Vinyl Chloride	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>16</b>
1,1 Dichloroethane	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>7.8J</b>
Cis-1,2-Dichloroethene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>930A</b>
Trans-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>13</b>
Trans-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>13</b>
Trichloroethene (Trichloroethylene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>300</b>
Tetrachloroethene (Tetrachloroethylene)	µg/m <sup>3</sup>	ND	ND	ND	<b>0.48J</b>	<b>0.77J</b>	<b>760A</b>

**DAY 2: August 31 – September 1, 2005**

COMPOUND	UNITS	MONITORING SITES					
		ALA-1	ALA-2	ALA-3	ALA-4	ALA-5	ALA-6
Vinyl Chloride	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>14A</b>
1,1 Dichloroethane	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>8.2AJ</b>
Cis-1,2-Dichloroethene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>830</b>
Trans-1,2-Dichloroethene	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>16A</b>
Trichloroethene (Trichloroethylene)	µg/m <sup>3</sup>	ND	ND	ND	ND	ND	<b>270A</b>
Tetrachloroethene (Tetrachloroethylene)	µg/m <sup>3</sup>	<b>0.36J</b>	<b>0.35J</b>	<b>0.94J</b>	<b>2.6</b>	<b>2.4</b>	<b>340</b>

ALA-1: upwind Site/metereological station, approximately 1000 yards southwest of Alaric Inc.  
ALA-2: approximately 1000 yards west of Alaric Inc;intersection of East Jewell and North 64<sup>th</sup> Streets

ALA-3: residence on Orient Road

ALA-4, ALA-5: duplicate site adjacent to Alaric building

ND= not-detected at or above the reporting limit

J= reported value is an estimate

A= analyte analyzed in replicate – reported value is an average of replicates

µg/m<sup>3</sup> = micrograms per cubic meter

Source: (EPA 2005)<sup>2</sup>

## Appendix A

### Meteorological Data Wind Direction and Speed

<u>HOUR</u>	<u>6/20/2005</u>		<u>6/21/2005</u>		<u>6/22/2005</u>	
	<u>WD</u>	<u>WS</u>	<u>WD</u>	<u>WS</u>	<u>WD</u>	<u>WS</u>
1:00	48	5	69	4	208	2
2:00	59	6	69	5	238	1
3:00	64	6	72	4	41	2
4:00	59	5	68	4	42	2
5:00	48	4	62	4	50	4
6:00	50	4	66	4	68	3
7:00	44	4	69	4	56	4
8:00	49	5	71	4	61	4
9:00	63	6	81	4	71	5
10:00	59	5	97	6	69	5
11:00	63	5	96	5	75	5
12:00	68	5	104	6	76	3
13:00	69	6	101	7	85	2
14:00	73	6	105	4	128	4
15:00	66	5	148	3	159	4
16:00	89	8	158	3	169	6
17:00	42	7	156	4	59	4
18:00	43	6	162	3	61	3
19:00	53	5	165	4	85	5
20:00	58	9	158	3	68	4
21:00	51	6	199	1	70	6
22:00	49	5	61	1	76	3
23:00	62	5	125	3	93	2
0:00	71	5	144	2	56	3
<b><u>AVERAGE</u></b>	<b><u>59</u></b>	<b><u>5</u></b>	<b><u>101</u></b>	<b><u>3</u></b>	<b><u>90</u></b>	<b><u>4</u></b>

WD = wind direction in degrees

WS = wind speed in miles per hour

## Appendix B

### Meteorological Data Wind Direction and Speed

<u>HOUR</u>	<u>8/30/2005</u>		<u>8/31/2005</u>		<u>9/1/2005</u>	
	<u>WD</u>	<u>WS</u>	<u>WD</u>	<u>WS</u>	<u>WD</u>	<u>WS</u>
1:00	190	4	204	3	102	1
2:00	184	4	190	2	130	2
3:00	186	3	232	2	138	1
4:00	174	3	262	5	149	2
5:00	184	3	249	4	194	2
6:00	179	4	245	3	208	1
7:00	179	4	251	3	135	1
8:00	179	4	224	2	156	1
9:00	185	5	238	3	166	1
10:00	201	5	238	6	263	3
11:00	233	8	235	7	269	4
12:00	254	11	243	9	325	3
13:00	248	12	243	9	331	3
14:00	251	12	246	11	240	2
15:00	248	12	239	10	246	3
16:00	251	13	73	4	55	2
17:00	249	14	85	4	340	2
18:00	249	12	76	1	332	2
19:00	245	9	65	2	327	2
20:00	241	7	90	2	316	1
21:00	239	7	71	1	290	1
22:00	241	6	79	2	56	1
23:00	239	4	15	1	124	1
0:00	214	4	159	0	319	1
<b><u>AVERAGE</u></b>	<b><u>233</u></b>	<b><u>6</u></b>	<b><u>237</u></b>	<b><u>3</u></b>	<b><u>270</u></b>	<b><u>1</u></b>

WD = wind direction in degrees

WS = wind speed in miles per hour

## Appendix C

### ATSDR Glossary of Environmental Health Terms

This glossary defines words used by the Agency for Toxic Substances and Disease Registry (ATSDR) in communications with the public. It is not a complete dictionary of environmental health terms. If you have questions or comments, call ATSDR's toll-free telephone number, 1-888-422-8737.

#### **Absorption**

The process of taking in. For a person or an animal, absorption is the process of a substance getting into the body through the eyes, skin, stomach, intestines, or lungs.

#### **Acute**

Occurring over a short time [compare with chronic].

#### **Acute exposure**

Contact with a substance that occurs once or for only a short time (up to 14 days) [compare with intermediate duration exposure and chronic exposure].

#### **Additive effect**

A biologic response to exposure to multiple substances that equals the sum of responses of all the individual substances added together [compare with antagonistic effect and synergistic effect].

#### **Adverse health effect**

A change in body function or cell structure that might lead to disease or health problems

#### **Aerobic**

Requiring oxygen [compare with anaerobic].

#### **The Agency for Toxic Substances and Disease Registry (ATSDR)**

The Agency for Toxic Substances and Disease Registry (ATSDR) is a federal public health agency with headquarters in Atlanta, Georgia, and 10 regional offices in the United States. ATSDR's mission is to serve the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances.

#### **Ambient**

Surrounding (for example, *ambient* air).

#### **Anaerobic**

Requiring the absence of oxygen [compare with aerobic].

#### **Analyte**

A substance measured in the laboratory. A chemical for which a sample (such as water, air, or blood) is tested in a laboratory. For example, if the analyte is mercury, the laboratory test will determine the amount of mercury in the sample.

#### **Analytic epidemiologic study**

A study that evaluates the association between exposure to hazardous substances and disease by testing scientific hypotheses.

#### **Antagonistic effect**

A biologic response to exposure to multiple substances that is **less** than would be expected if the known effects of the individual substances were added together [compare with additive effect and synergistic effect].

**Background level**

An average or expected amount of a substance or radioactive material in a specific environment, or typical amounts of substances that occur naturally in an environment.

**Biodegradation**

Decomposition or breakdown of a substance through the action of microorganisms (such as bacteria or fungi) or other natural physical processes (such as sunlight).

**Biologic indicators of exposure study**

A study that uses (a) biomedical testing or (b) the measurement of a substance [an analyte], its metabolite, or another marker of exposure in human body fluids or tissues to confirm human exposure to a hazardous substance [also see exposure investigation].

**Biologic monitoring**

Measuring hazardous substances in biologic materials (such as blood, hair, urine, or breath) to determine whether exposure has occurred. A blood test for lead is an example of biologic monitoring.

**Biologic uptake**

The transfer of substances from the environment to plants, animals, and humans.

**Biota**

Plants and animals in an environment. Some of these plants and animals might be sources of food, clothing, or medicines for people.

**CAP** [see Community Assistance Panel.]

**Cancer**

Any one of a group of diseases that occur when cells in the body become abnormal and grow or multiply out of control.

**Cancer risk**

A theoretical risk for getting cancer if exposed to a substance every day for 70 years (a lifetime exposure). The true risk might be lower.

**Carcinogen**

A substance that causes cancer.

**Case study**

A medical or epidemiologic evaluation of one person or a small group of people to gather information about specific health conditions and past exposures.

**Case-control study**

A study that compares exposures of people who have a disease or condition (cases) with people who do not have the disease or condition (controls). Exposures that are more common among the cases may be considered as possible risk factors for the disease.

**Central nervous system**

The part of the nervous system that consists of the brain and the spinal cord.

**CERCLA** [see Comprehensive Environmental Response, Compensation, and Liability Act of 1980]

**Chronic**

Occurring over a long time [compare with acute].

**Chronic exposure**

Contact with a substance that occurs over a long time (more than 1 year) [compare with acute exposure and intermediate duration exposure]

**Cluster investigation**

A review of an unusual number, real or perceived, of health events (for example, reports of



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cancer) grouped together in time and location. Cluster investigations are designed to confirm case reports; determine whether they represent an unusual disease occurrence; and, if possible, explore possible causes and contributing environmental factors.

### **Community Assistance Panel (CAP)**

A group of people from a community and from health and environmental agencies who work with ATSDR to resolve issues and problems related to hazardous substances in the community. CAP members work with ATSDR to gather and review community health concerns, provide information on how people might have been or might now be exposed to hazardous substances, and inform ATSDR on ways to involve the community in its activities.

### **Comparison value (CV)**

Calculated concentration of a substance in air, water, food, or soil that is unlikely to cause harmful (adverse) health effects in exposed people. The CV is used as a screening level during the public health assessment process. Substances found in amounts greater than their CVs might be selected for further evaluation in the public health assessment process.

**Completed exposure pathway** [see exposure pathway].

### **Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)**

CERCLA, also known as Superfund, is the federal law that concerns the removal or cleanup of hazardous substances in the environment and at hazardous waste sites. ATSDR, which was created by CERCLA, is responsible for assessing health issues and supporting public health activities related to hazardous waste sites or other environmental releases of hazardous substances. This law was later amended by the Superfund Amendments and Reauthorization Act (SARA).

### **Concentration**

The amount of a substance present in a certain amount of soil, water, air, food, blood, hair, urine, breath, or any other media.

### **Contaminant**

A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.

### **Delayed health effect**

A disease or an injury that happens as a result of exposures that might have occurred in the past.

### **Dermal**

Referring to the skin. For example, dermal absorption means passing through the skin.

### **Dermal contact**

Contact with (touching) the skin [see route of exposure].

### **Descriptive epidemiology**

The study of the amount and distribution of a disease in a specified population by person, place, and time.

### **Detection limit**

The lowest concentration of a chemical that can reliably be distinguished from a zero concentration.

### **Dose (for chemicals that are not radioactive)**

The amount of a substance to which a person is exposed over some time period. Dose is a measurement of exposure. Dose is often expressed as milligram (amount) per kilogram (a measure of body weight) per day (a measure of time) when people eat or drink contaminated

water, food, or soil. In general, the greater the dose, the greater the likelihood of an effect. An “exposure dose” is how much of a substance is encountered in the environment. An “absorbed dose” is the amount of a substance that actually got into the body through the eyes, skin, stomach, intestines, or lungs.

**Dose (for radioactive chemicals)**

The radiation dose is the amount of energy from radiation that is actually absorbed by the body. This is not the same as measurements of the amount of radiation in the environment.

**Dose-response relationship**

The relationship between the amount of exposure [dose] to a substance and the resulting changes in body function or health (response).

**Environmental media**

Soil, water, air, biota (plants and animals), or any other parts of the environment that can contain contaminants.

**Environmental media and transport mechanism**

Environmental media include water, air, soil, and biota (plants and animals). Transport mechanisms move contaminants from the source to points where human exposure can occur. The environmental media and transport mechanism is the second part of an exposure pathway.

**EPA**

United States Environmental Protection Agency.

**Epidemiologic surveillance** [see Public health surveillance].

**Epidemiology**

The study of the distribution and determinants of disease or health status in a population; the study of the occurrence and causes of health effects in humans.

**Exposure**

Contact with a substance by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term [acute exposure], of intermediate duration, or long-term [chronic exposure].

**Exposure assessment**

The process of finding out how people come into contact with a hazardous substance, how often and for how long they are in contact with the substance, and how much of the substance they are in contact with.

**Exposure-dose reconstruction**

A method of estimating the amount of people’s past exposure to hazardous substances. Computer and approximation methods are used when past information is limited, not available, or missing.

**Exposure investigation**

The collection and analysis of site-specific information and biologic tests (when appropriate) to determine whether people have been exposed to hazardous substances.

**Exposure pathway**

The route a substance takes from its source (where it began) to its end point (where it ends), and how people can come into contact with (or get exposed to) it. An exposure pathway has five parts: a source of contamination (such as an abandoned business); an environmental media and transport mechanism (such as movement through groundwater); a point of exposure (such as a private well); a route of exposure (eating, drinking, breathing, or

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touching), and a receptor population (people potentially or actually exposed). When all five parts are present, the exposure pathway is termed a completed exposure pathway.

### **Exposure registry**

A system of ongoing follow up of people who have had documented environmental exposures.

### **Feasibility study**

A study by EPA to determine the best way to clean up environmental contamination. A number of factors are considered, including health risk, costs, and what methods will work well.

### **Groundwater**

Water beneath the earth's surface in the spaces between soil particles and between rock surfaces [compare with surface water].

### **Hazard**

A source of potential harm from past, current, or future exposures.

### **Hazardous Substance Release and Health Effects Database (HazDat)**

The scientific and administrative database system developed by ATSDR to manage data collection, retrieval, and analysis of site-specific information on hazardous substances, community health concerns, and public health activities.

### **Hazardous waste**

Potentially harmful substances that have been released or discarded into the environment.

### **Health investigation**

The collection and evaluation of information about the health of community residents. This information is used to describe or count the occurrence of a disease, symptom, or clinical measure and to evaluate the possible association between the occurrence and exposure to hazardous substances.

### **Indeterminate public health hazard**

The category used in ATSDR's public health assessment documents when a professional judgment about the level of health hazard cannot be made because information critical to such a decision is lacking.

### **Incidence**

The number of new cases of disease in a defined population over a specific time period [contrast with prevalence].

### **Ingestion**

The act of swallowing something through eating, drinking, or mouthing objects. A hazardous substance can enter the body this way [see route of exposure].

### **Inhalation**

The act of breathing. A hazardous substance can enter the body this way [see route of exposure].

### **Intermediate duration exposure**

Contact with a substance that occurs for more than 14 days and less than a year [compare with acute exposure and chronic exposure].

### **In vitro**

In an artificial environment outside a living organism or body. For example, some toxicity testing is done on cell cultures or slices of tissue grown in the laboratory, rather than on a living animal [compare with in vivo].

**In vivo**

Within a living organism or body. For example, some toxicity testing is done on whole animals, such as rats or mice [compare with in vitro].

**Lowest-observed-adverse-effect level (LOAEL)**

The lowest tested dose of a substance that has been reported to cause harmful (adverse) health effects in people or animals.

**Medical monitoring**

A set of medical tests and physical exams specifically designed to evaluate whether an individual's exposure could negatively affect that person's health.

**Metabolism**

The conversion or breakdown of a substance from one form to another by a living organism.

**Metabolite**

Any product of metabolism.

**mg/kg**

Milligram per kilogram.

**mg/cm<sup>2</sup>**

Milligram per square centimeter (of a surface).

**mg/m<sup>3</sup>**

Milligram per cubic meter; a measure of the concentration of a chemical in a known volume (a cubic meter) of air, soil, or water.

**Migration**

Moving from one location to another.

**Minimal risk level (MRL)**

An ATSDR estimate of daily human exposure to a hazardous substance at or below which that substance is unlikely to pose a measurable risk of harmful (adverse), noncancerous effects. MRLs are calculated for a route of exposure (inhalation or oral) over a specified time period (acute, intermediate, or chronic). MRLs should not be used as predictors of harmful (adverse) health effects [see reference dose].

**National Priorities List for Uncontrolled Hazardous Waste Sites (National Priorities List or NPL)**

EPA's list of the most serious uncontrolled or abandoned hazardous waste sites in the United States. The NPL is updated on a regular basis.

**National Toxicology Program (NTP)**

Part of the Department of Health and Human Services. NTP develops and carries out tests to predict whether a chemical will cause harm to humans.

**No apparent public health hazard**

A category used in ATSDR's public health assessments for sites where human exposure to contaminated media might be occurring, might have occurred in the past, or might occur in the future, but where the exposure is not expected to cause any harmful health effects.

**No-observed-adverse-effect level (NOAEL)**

The highest tested dose of a substance that has been reported to have no harmful (adverse) health effects on people or animals.

**No public health hazard**

A category used in ATSDR's public health assessment documents for sites where people have never and will never come into contact with harmful amounts of site-related substances.

**NPL** [see National Priorities List for Uncontrolled Hazardous Waste Sites]

**Plume**

A volume of a substance that moves from its source to places farther away from the source. Plumes can be described by the volume of air or water they occupy and the direction they move. For example, a plume can be a column of smoke from a chimney or a substance moving with groundwater.

**Point of exposure**

The place where someone can come into contact with a substance present in the environment [see exposure pathway].

**Population**

A group or number of people living within a specified area or sharing similar characteristics (such as occupation or age).

**Potentially responsible party (PRP)**

A company, government, or person legally responsible for cleaning up the pollution at a hazardous waste site under Superfund. There may be more than one PRP for a particular site.

**ppb**

Parts per billion.

**ppm**

Parts per million.

**Public availability session**

An informal, drop-by meeting at which community members can meet one-on-one with ATSDR staff members to discuss health and site-related concerns.

**Public comment period**

An opportunity for the public to comment on agency findings or proposed activities contained in draft reports or documents. The public comment period is a limited time period during which comments will be accepted.

**Public health action**

A list of steps to protect public health.

**Public health advisory**

A statement made by ATSDR to EPA or a state regulatory agency that a release of hazardous substances poses an immediate threat to human health. The advisory includes recommended measures to reduce exposure and reduce the threat to human health.

**Public health assessment (PHA)**

An ATSDR document that examines hazardous substances, health outcomes, and community concerns at a hazardous waste site to determine whether people could be harmed from coming into contact with those substances. The PHA also lists actions that need to be taken to protect public health.

**Public health hazard**

A category used in ATSDR's public health assessments for sites that pose a public health hazard because of long-term exposures (greater than 1 year) to sufficiently high levels of hazardous substances or radionuclides that could result in harmful health effects.

**Public health hazard categories**

Public health hazard categories are statements about whether people could be harmed by conditions present at the site in the past, present, or future. One or more hazard categories might be appropriate for each site. The five public health hazard categories are no public health hazard, no apparent public health hazard, indeterminate public health hazard, public health hazard, and urgent public health hazard.

**Public health statement**

The first chapter of an ATSDR toxicological profile. The public health statement is a summary written in words that are easy to understand. The public health statement explains how people might be exposed to a specific substance and describes the known health effects of that substance.

**Public health surveillance**

The ongoing, systematic collection, analysis, and interpretation of health data. This activity also involves timely dissemination of the data and use for public health programs.

**Receptor population**

People who could come into contact with hazardous substances [see exposure pathway].

**Reference dose (RfD)**

An EPA estimate, with uncertainty or safety factors built in, of the daily lifetime dose of a substance that is unlikely to cause harm in humans.

**Remedial investigation**

The CERCLA process of determining the type and extent of hazardous material contamination at a site.

**RfD** [see reference dose]**Risk**

The probability that something will cause injury or harm.

**Risk reduction**

Actions that can decrease the likelihood that individuals, groups, or communities will experience disease or other health conditions.

**Risk communication**

The exchange of information to increase understanding of health risks.

**Route of exposure**

The way people come into contact with a hazardous substance. Three routes of exposure are breathing [inhalation], eating or drinking [ingestion], or contact with the skin [dermal contact].

**Safety factor** [see uncertainty factor]**SARA** [see Superfund Amendments and Reauthorization Act]**Sample**

A portion or piece of a whole. A selected subset of a population or subset of whatever is being studied. For example, in a study of people the sample is a number of people chosen from a larger population [see population]. An environmental sample (for example, a small amount of soil or water) might be collected to measure contamination in the environment at a specific location.

**Sample size**

The number of units chosen from a population or an environment.

**Source of contamination**

The place where a hazardous substance comes from, such as a landfill, waste pond, incinerator, storage tank, or drum. A source of contamination is the first part of an exposure pathway.

**Special populations**

People who might be more sensitive or susceptible to exposure to hazardous substances because of factors such as age, occupation, sex, or behaviors (for example, cigarette

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smoking). Children, pregnant women, and older people are often considered special populations.

**Statistics**

A branch of mathematics that deals with collecting, reviewing, summarizing, and interpreting data or information. Statistics are used to determine whether differences between study groups are meaningful.

**Substance**

A chemical.

**Superfund** [see Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Superfund Amendments and Reauthorization Act (SARA)]

**Superfund Amendments and Reauthorization Act (SARA)**

In 1986, SARA amended the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and expanded the health-related responsibilities of ATSDR. CERCLA and SARA direct ATSDR to look into the health effects from substance exposures at hazardous waste sites and to perform activities including health education, health studies, surveillance, health consultations, and toxicological profiles.

**Surface water**

Water on the surface of the earth, such as in lakes, rivers, streams, ponds, and springs [compare with groundwater].

**Surveillance** [see public health surveillance]

**Survey**

A systematic collection of information or data. A survey can be conducted to collect information from a group of people or from the environment. Surveys of a group of people can be conducted by telephone, by mail, or in person. Some surveys are done by interviewing a group of people [see prevalence survey].

**Synergistic effect**

A biologic response to multiple substances where one substance worsens the effect of another substance. The combined effect of the substances acting together is greater than the sum of the effects of the substances acting by themselves [see additive effect and antagonistic effect].

**Teratogen**

A substance that causes defects in development between conception and birth. A teratogen is a substance that causes a structural or functional birth defect.

**Toxic agent**

Chemical or physical (for example, radiation, heat, cold, microwaves) agents that, under certain circumstances of exposure, can cause harmful effects to living organisms.

**Toxicological profile**

An ATSDR document that examines, summarizes, and interprets information about a hazardous substance to determine harmful levels of exposure and associated health effects. A toxicological profile also identifies significant gaps in knowledge on the substance and describes areas where further research is needed.

**Toxicology**

The study of the harmful effects of substances on humans or animals.

**Tumor**

An abnormal mass of tissue that results from excessive cell division that is uncontrolled and

progressive. Tumors perform no useful body function. Tumors can be either benign (not cancer) or malignant (cancer).

**Uncertainty factor**

Mathematical adjustments for reasons of safety when knowledge is incomplete. For example, factors used in the calculation of doses that are not harmful (adverse) to people. These factors are applied to the lowest-observed-adverse-effect-level (LOAEL) or the no-observed-adverse-effect-level (NOAEL) to derive a minimal risk level (MRL). Uncertainty factors are used to account for variations in people's sensitivity, for differences between animals and humans, and for differences between a LOAEL and a NOAEL. Scientists use uncertainty factors when they have some, but not all, the information from animal or human studies to decide whether an exposure will cause harm to people [also sometimes called a safety factor].

**Urgent public health hazard**

A category used in ATSDR's public health assessments for sites where short-term exposures (less than 1 year) to hazardous substances or conditions could result in harmful health effects that require rapid intervention.

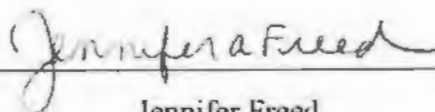
**Volatile organic compounds (VOCs)**

Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, and methylene chloride.



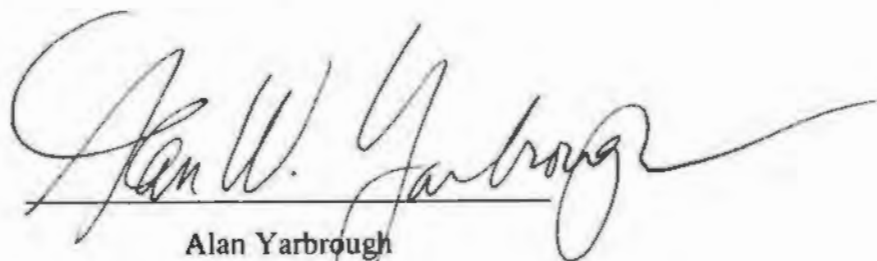
## CERTIFICATION

The Florida Department of Health, Bureau of Community Environmental Health prepared this Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It followed approved methodology and procedures existing at the time it began. The Cooperative Agreement Partner completed editorial review.



Jennifer Freed  
Technical Project Officer  
CAT, SPAB, DHAC

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



Alan Yarbrough  
Team Lead  
CAT, SPAB, DHAC, ATSDR