

US EPA ARCHIVE DOCUMENT

**Schools Air Toxics Monitoring (2009)**  
**EPA's Investigation and Resolution of Contamination Problems in the Collection of volatile Organic Compounds**

**Executive Summary**

The Environmental Protection Agency and its state and local monitoring partners will repeat air quality sampling for volatile organic compounds (VOCs) at 24 schools to replace samples the agency has determined to be potentially contaminated and thus invalid.

Samples at some schools were contaminated when a timer on the VOC monitors leaked, allowing chemical produced by the timer's box to enter the sampling canister. A number of the contaminated samples showed elevated levels of a number of pollutants, including acrylonitrile, dichloromethane, toluene and styrene. Those chemicals, particularly acrylonitrile and dichloromethane, are rarely detected in ambient monitoring. When they are found in the ambient air, it generally is at much lower levels.

Once EPA learned that the timer on the VOC sampler was leaking and allowing samples to become contaminated, EPA notified its monitoring partners to either: 1) remove the timer and manually open and shut the VOC sample collection valve; or 2) replace the timer box with a timer box EPA's laboratory had retrofitted to prevent the leak.

Not all of the VOC timers leaked, and the timers appear not to have leaked every time they were used. To determine which samples were contaminated, EPA analyzed results for two of the "signature" pollutants -- acrylonitrile and dichloromethane -- from each monitoring site and compared the levels found at the school monitors with levels typically found at other national monitoring sites. Samples with acrylonitrile readings below 1.10 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and dichloromethane readings below 1.45  $\mu\text{g}/\text{m}^3$  were deemed valid.

EPA reviewed the sampling results with the National Association of Clean Air Agencies' Monitoring Steering Committee, which often provides advice to EPA on national monitoring strategies. EPA and the Monitoring Steering Committee agreed that a precautionary approach was best. Rather than invalidate samples one by one, they decided that: if any of a school's VOC sampling results showed indications of contamination, then all of that school's VOC samples would be invalidated from the beginning of monitoring until the leaking timer was either removed from the sampling train (samples taken manually) or until a retrofitted timer was used.

Where samples were invalidated, additional samples will be collected to obtain the 10 valid samples originally planned for the screening analysis at each school location. In some instances, EPA or states had other monitors collocated at the school monitoring sites as a quality assurance check. The samples from these monitors also were analyzed by EPA's lab. Where results from these monitors are valid, they are being substituted for the invalidated samples in lieu of resampling.

The datasets for some school air toxics monitoring sites did not have any indications of timer-related contamination, and were determined to be valid. However, EPA has offered to pay for the analysis for 10 additional VOC samples at these sites, if any state, local and tribal agencies chooses to extend

monitoring.

EPA consulted with all affected state, local and tribal agencies regarding the determination of which data were valid or invalid, and at least one state questioned EPA's decision. The invalidated data are included in this report only for purposes of transparency. They have been removed from our Air Quality System (AQS) database to avoid any potential for user confusion later.

## **Background**

In March 2009, the US Environmental Protection Agency (EPA) initiated the School Air Toxics (SAT) program to measure the concentration of hazardous air pollutants, also known as air toxics, at selected schools across the United States. The program applies EPA collection and analysis methodology appropriate to each pollutant, or suite of pollutants, targeted in order to obtain representative data on the pollutants monitored for at each site. One of the targeted suites of pollutants is volatile organic compounds (VOCs). Monitoring for VOCs is being conducted following the specifications and procedures presented in EPA Compendium Methods TO-15.

Each of the TO-15 collection systems employed contain the following components:

- A stainless steel (SS) mechanical vacuum Veriflo regulator, outfitted with an SS inlet probe and an SS screened rain shield.
- A combination electronic timer that incorporates a SS latching solenoid valve assembly, housed in a fiberglass water-tight enclosure.
- A SUMMA<sup>R</sup> treated SS canister with an internal volume of approximately 6L.

The Veriflo flow controller is calibrated to control the collection flow rate over the 24-hour duration of each sampling event to ensure that a correctly time-integrated ambient air sample is achieved. The timer/solenoid assembly is used to begin and end each sampling event at specified start/stop times, and to also maintain the vacuum pressure present in the sample canister before and after sampling is conducted. The SUMMA<sup>R</sup> canister is used to contain the ambient air sample gas collected. (SUMMA is a registered trademark of Moletrics Inc.)

## **The Issue**

After several weeks of sample collection and analysis, a sub-group of the overall SAT VOC ambient air monitoring sites reported a group of four VOCs at significantly higher concentrations than would typically be found in ambient air samples. The four VOCs identified were dichloromethane, acrylonitrile, toluene, and styrene. Concentration levels ranged from approximately 10 to 900 parts per billion of volume (ppbv). Some of the state and local agencies responsible for operating these individual monitoring sites immediately questioned the validity of the measurements. They asked EPA to examine the sample collection and analysis approach, as the concentration levels measured of these compounds was found to be significantly higher than what is typically found with their monitoring programs.

## Investigating Possible Sources of Sample Contamination

Because dichloromethane and toluene are regularly used in laboratory environments, the potential for in-laboratory contamination was first investigated as follows:

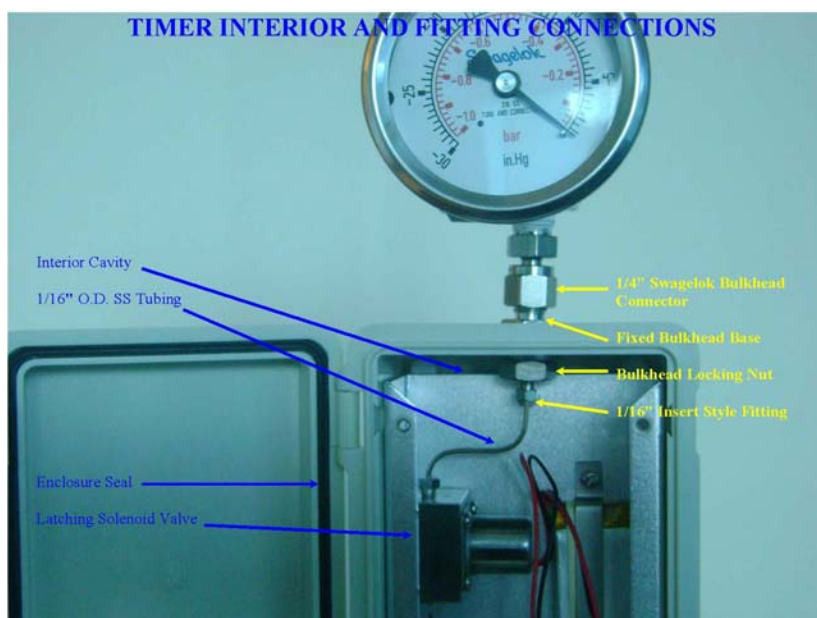
- **Canister cleaning blank analyses were evaluated.** It was determined that all canister cleaning batches passed the required cleanliness testing which has criteria of 0.20 ppbv/compound, or less within a cleaned canister and that the patterned group of compounds was never identified in any of the canister blank samples.
- **Pre-deployment TO-15 sampling system certification data were evaluated.** Part of the TO-15 certification process requires that each complete sampling system be tested for the potential for cleanliness or positive bias (i.e., whether the system add compounds to samples collected due to said compounds being present in the components of the sampler) by collecting a 24-hour integrated sample of humidified zero air through it. It was determined that each complete sampling system had passed the cleanliness criteria of 0.20 ppbv/compound, or less, and that none of the compounds comprising the patterned group was present. The systems left for the field non-biasing and ready for use.
- **The daily QC Instrument Blank analyses were evaluated.** It was determined that all of the daily blanks passed the required cleanliness criteria of 0.20 ppbv/compound, or less, and that the patterned group was not identified in any of the QC blanks. The state of the system was appropriate to conduct analyses each day the instrument was utilized.
- **Laboratory air was evaluated.** A 24-hour integrated TO-15 sample was collected inside the contract analysis laboratory used to analyze the SAT Program samples in order to assess whether the four suspect VOC compounds were present in the general laboratory air. Data from this sample showed that the laboratory air was exceptionally clean and that none of the suspect VOC compounds were present.
- **Samples analyzed before and after suspect samples were evaluated.** It was verified that there was not carryover of pollutants from one sample to the next sample analyzed. The analytical system was appropriate to analyze high concentration compounds without carryover contamination.

The contract laboratory used to prepare canisters and analyze samples from the SAT Program also performs these same functions for the other monitoring networks comprising EPA's National Monitoring Programs (i.e., UATMP, NATTS, and CSATAM). However, the pattern of compounds was only being seen in samples collected at SAT sites. This meant that elements specific to the SAT Program specifically needed to be evaluated. Because network site locations were in different geographic locations, and associated emission sources were different from site to site, it became obvious that the issue had to have something to do with the monitoring sampling systems after their deployment. They were the only elements that were common to each SAT site, but not common to the other monitoring networks being analyzed by EPA's contract laboratory. This reduced the question to

what could be happening to the sampling systems that; 1) would cause the patterned high level compounds to occur, and; 2) would cause them to occur at some of the sites, but not at all of the sites.

### **Problem Identification**

The cause of the problem was identified when one of the monitoring systems used at a site experiencing the four elevated VOC compounds was returned for assessment. The timer/solenoid assembly component of the SAT VOC sampling system is outfitted with a bulkhead fitting located at each end of the unit (Figure 1). The bulkhead fitting is positioned so that part of it is outside the fiberglass enclosure and part of it is positioned inside. These bulkhead fittings are used to allow connection of the various sampling system components and sub-components. While inspecting the returned sampling system, it was observed that the timer's inlet bulkhead fitting was very loose, capable of rotating by hand without the use of a wrench. The loosening of the bulkhead fitting can occur during connection of the timer to the sampling train. Once this problem was noticed, the timer was opened up so that the internal connections could be inspected. It was observed that every time the bulkhead fitting was rotated, the 1/16 inch single ferrule nut connector would also rotate causing an internal leak within the timer.



**Figure 1: Timer Interior and Fitting Connections**

### **Additional Testing of Timer Equipment:**

To determine if the sample contamination was coming from leaks of the fiberglass enclosure additional tests were made in the laboratory. Initially, two timer systems known to have inlet fitting leaks (like those described above) were tested. The analysis results showed that each of the four VOC compounds (acrylonitrile, dichloromethane, styrene and toluene) were present in both samples.

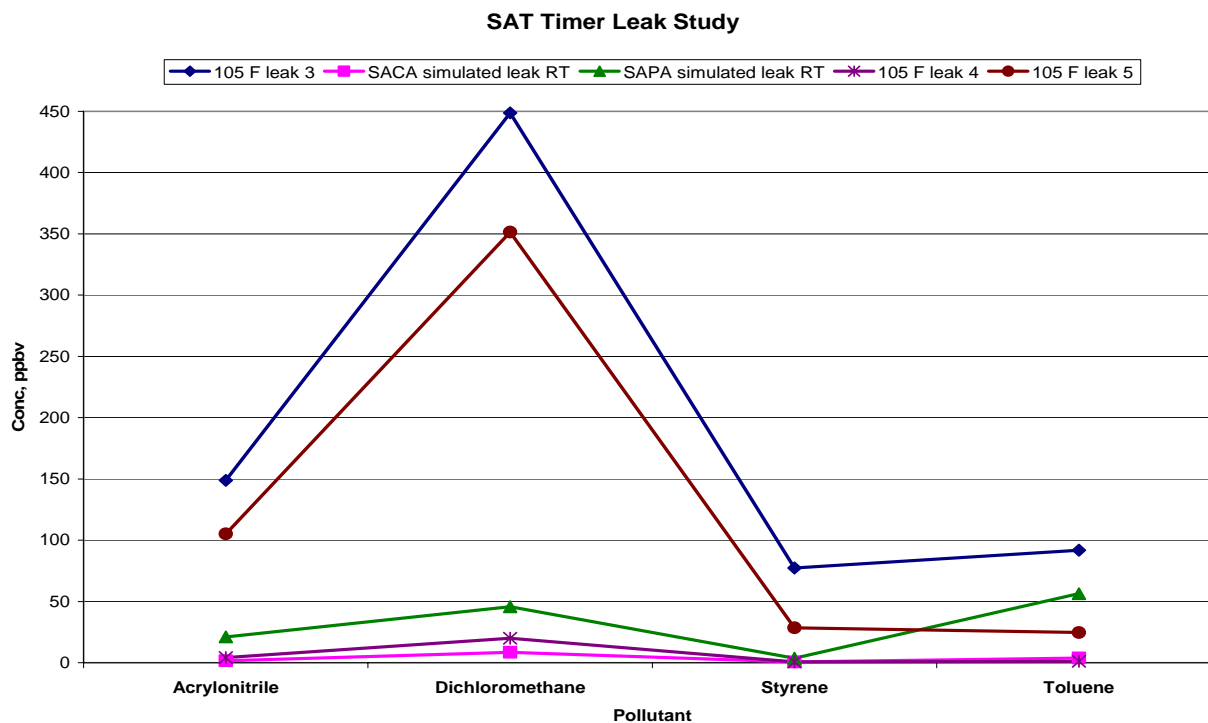
The inlet leaks in these two samplers were then repaired so that the sample path was corrected.

Certification samples were collected and analyzed. The analysis results from these samples (i.e., post-repair) showed that none of the patterned VOC compounds were now present and that the systems passed certification having no VOCs compounds with a concentration greater than 0.20 ppbv.

To further test the potential for contamination from these leaks, additional tests were conducted. In this test, three more timer systems with inlet leaks were set up and underwent zero certification. However, for this test a heat lamp was used to raise the exterior temperature to approximately 100 degrees F to simulate the conditions that the air monitor samplers would be subjected to while sitting out in the hot summer sun all day. The analysis results for these air monitor samples once again showed all four VOC pattern compounds but at much higher concentrations ranging from:

- Acrylonitrile – 8.7 to 324  $\mu\text{g}/\text{m}^3$
- Dichloromethane– 70 to 1560  $\mu\text{g}/\text{m}^3$
- Toluene – 3.8 to 347  $\mu\text{g}/\text{m}^3$
- Styrene – 2.6 to 328  $\mu\text{g}/\text{m}^3$

Data presented in Figure 2 show the results of the additional testing done on leaking timers and heated timers with leaks. The higher values of dichloromethane and acrylonitrile occurred during the heat simulation study. However, the original timer tested with leaks also demonstrated higher than normal values of dichloromethane and acrylonitrile.

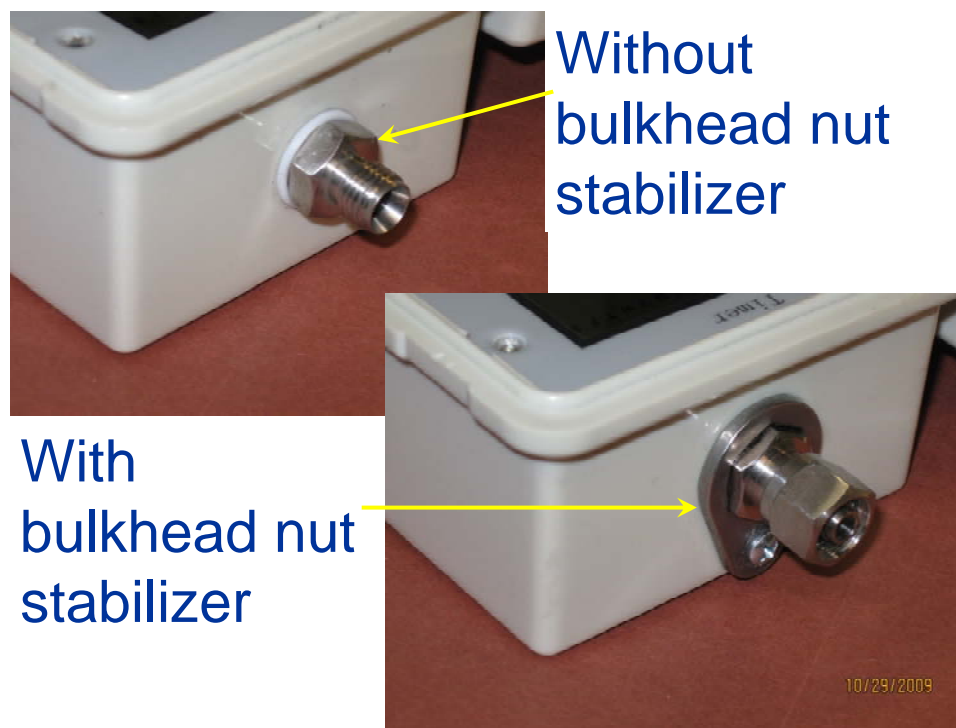


**Figure 2: Timer Leak Study Results**

EPA determined the cause of the elevated values of several VOC pollutants seen with the SAT program was the leaks with the timer.

### **Fixing the Leak Problem:**

To fix the leak and eliminate the potential for contamination, EPA presented three options for the states responsible for the VOC sampling at their schools: 1) completely remove timer and manually open and close canister valve; 2) incorporate a bulkhead nut stabilizer retrofit on the timer (Figure 3); or 3) replace the current passive sampling system with a commonly used active sampling systems such as ATEC, AVOCS, and Xontech (e.g., such as in the NATTS program).



**Figure 3: Retrofit Timer**

### **Recommended Option to Determine Schools with Valid VOC Data Versus Invalid VOC Data:**

Once EPA determined that an issue with the timer on the VOC monitor was contaminating samples, the existing VOC data through October 22, 2009, were evaluated to determine if there was a data pattern which might indicate a leak in any of the school air toxics monitors. The two pollutants, dichloromethane and acrylonitrile which were found to be present in higher amounts when there was a leak in the monitor based on actual measurements in the laboratory were used as markers to detect leaky systems.

EPA then looked at the following information in making a determination on the validity of the data:

1. Were the values at each school consistent with typical monitored values for these pollutants?
2. Did field personnel obtaining the monitoring samples note any issues with the monitor's timing device?
3. Did the laboratory note any quality assurance issues that might compromise the data?

After evaluating these points, EPA determined that data from 16 of the SAT sites had not been compromised by any issues with the monitoring equipment. For many of the other schools, it was obvious from the signature high levels of the two pollutants that a leak had occurred, and at other schools the data were questionable as values did not appear to fall within the typical monitored range consistently. In consultation with the NACAA Monitoring Steering Committee, EPA decided to invalidate all data from any monitor that had suspect data. At nine of the SAT monitoring sites, EPA had co-located monitors (2 monitors sampling for the same pollutants at the same time). Co-located monitors are used to check the equipment precision and results. Sample results from one monitor might have had timer issues while the co-located monitor did not. In these cases, the data from the co-located monitor was considered valid. In addition, several states have placed their own active sampling systems such as ATEC, AVOCS, and Xontech at the SAT monitoring sites and are having the analysis done at EPA's contract laboratory. These systems did not have the timer issues and data from them are considered valid. After evaluation of all the data, additional VOC samples will need to be collected at 21 monitoring sites until 10 valid samples have been analyzed.

The EPA also decided for each of the 16 monitoring sites where data had been determined to be valid, each state, local or tribal agency would be given the option of collecting an additional 10 VOC samples. South Coast Air Quality Management District decided that they would take additional VOC samples at the Felton Elementary School in Lennox, California with a retrofitted timer to ensure that the previous results were accurate.

During discussions about the recommendation with the state and local agencies, one state disagreed with the decision made by EPA regarding the validity of their data. At the Harriet Tubman Elementary School in Portland, Oregon, EPA had co-located an additional SAT monitor, and with the exception of the first sample both monitors reported very similar results which were only slightly above the typical national monitored range for acrylonitrile and dichloromethane. After the first sample the operator noticed an issue with one of the timers and then tightened the bulkhead nuts. In addition, the Oregon Department of Environmental Quality had data since 2008 from a NATTS monitor located 1.5 miles from the SAT site with very similar monitoring results. The EPA agreed in this situation that the results represented ambient air quality in the area and that there might be a source of these pollutants near to the school. As a result on the first sample value for one of the monitors was invalidated, and was replaced by the value from the co-located monitor. This increased the number of monitor sites with valid VOC data to 17.

### **Determining "Typical" Monitored Values:**

To provide a context for interpreting daily measured concentrations of key pollutants, EPA developed "typical" monitored values by evaluating the ambient monitoring data for those key pollutants from across the United States between the years 2004 and 2008. The "typical daily values" presented in the



table below represent the ranges within which 90% of all the available historical actual daily monitoring values fell.

<b>Air Toxics National Database 2004-2008</b>					
<b>Pollutant Group</b>	<b>Pollutant Name</b>	<b>Years monitored</b>	<b>Units</b>	<b>Range of Actual Daily Values</b>	
				<b>5th</b>	<b>95th</b>
VOCs (Volatile Organic Compounds)	Acrylonitrile	2004-2008	ug/m3	0.00	1.10
	dichloromethane	2004-2008	ug/m3	0.00	1.45

The 5<sup>th</sup> and 95<sup>th</sup> percentile concentrations presented in this table were calculated using ambient monitoring data extracted from EPA's AQS. The AQS consists of sub-daily and daily air toxics measurements from EPA, federal, state, local, and tribal air programs from 1973 to 2007. Currently, over 26 million air toxics concentration records are in AQS. Data for the pollutants of interest were extracted for the years 2004 through 2008. In addition, EPA removed all data which did not use VOC methods similar to those used in the SAT program (101, 109, 110, 113, 129, 136, 145, 146, 149, 150, 151, 152, 153, 171, 172, 175, 176, 210, and 211).

EPA also looked at the data for acrylonitrile and dichloromethane from the National Air Toxics Trends Stations (NATTS) for the years 2004-2008. The NATTS network consists of 28 monitors sited in both urban and rural areas to provide air toxics data of sufficient quality to identify trends, characterize ambient concentrations in representative areas and evaluate air quality models.

<b>National Air Toxics Trends Stations 2004-2008</b>					
<b>Pollutant Group</b>	<b>Pollutant Name</b>	<b>Years monitored</b>	<b>Units</b>	<b>Range of Actual Daily Values</b>	
				<b>5th</b>	<b>95th</b>
VOCs (Volatile Organic Compounds)	Acrylonitrile	2004-2008	ug/m3	0.00	0.33
	dichloromethane	2004-2008	ug/m3	0.00	1.35

Monitoring data for the schools that were retained are considered to fall within the range of typical daily values. All VOC monitored data which was invalidated is attached in Appendix A: Invalidated VOC Data by School. Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Charles Russell Elementary School	1,1,2,2-Tetrachloroethane		0	0	0	0	0		0	0	0		0	0		0							
	1,1,2-Trichloroethane		0	0	0	0	0		0	0	0		0	0		0							
	1,1-Dichloroethane		0	0	0	0	0		0	0	0		0	0		0							
	1,1-Dichloroethylene		0	0	0	0	0		0	0	0		0.004	0		0							
	1,2,4-Trichlorobenzene		0	0	0	0	0		0	0	0		0	0		0							
	1,2,4-Trimethylbenzene		0.046	0.175	0.035	0.063	0.016		0.036	0.12	0.168		0.068	0.202		0.017							
	1,2-Dichloropropane		0	0	0	0	0		0	0	0		0	0		0							
	1,3-Butadiene		0.018	0.036	0.011	0.034	0.008		0.022	0.058	0.047		0.025	0.062		0							
	1,4-Dichlorobenzene		0.019	0.029	0.016	0.022	0.012		0.013	0.028	0.025		0.024	0.04		0							
	Acetonitrile		0.365	0.196	0.381	0.301	0.199		0.465	0.235	0.298		0.367	0.342		0.229							
	Acrolein		1.17	0.97	0.918	1.28	2.49	1.89		2.194	2.512	1.886		1.055	1.315		0.846						
	Acrylonitrile		0	0	0	0	0		0	0	0		0	0		0							
	Benzene		0.84	0.271	1.1	0.179	0.531	0.142		0.299	1.291	1.15		0.53	1.023		0.151						
	Benzyl chloride		0	0	0	0	0		0	0	0		0	0		0							
	Bromoform		0	0	0	0	0		0	0	0		0	0		0							
	Bromomethane		0.026	0.01	0.014	0.013	0.012	0.011		0.021	0.025	0.02		0.021	0.024		0.024						
	Carbon disulfide		0.089	0.16	0.172	0.064	0.043	0.027		0.071	0.093	0.045		0.057	0.052		0.025						
	Carbon tetrachloride		0.304	0.123	0.109	0.132	0.114	0.182		0.35	0.285	0.216		0.24	0.251		0.431						
	Chlorobenzene		0	0	0	0	0		0	0	0		0	0		0							
	Chloroethane		0.025	0.007	0.011	0.017	0.01	0.011		0.021	0.029	0.023		0.018	0.011		0						
	Chloroform		0.112	0.033	0.048	0.037	0.058	0.041		0.132	0.102	0.066		0.066	0.06		0.046						
	Chloromethane		1.434	0.706	0.579	0.745	0.654	0.667		1.395	1.373	1.076		1.172	1.185		1.427						
	Chloroprene		0	0	0	0	0		0	0	0		0	0		0							
	Dichloromethane		3.28	0.333	0.263	0.987	0.211	0.18		0.403	0.592	0.309		5.209	1.221		0.549						
	Ethyl acrylate		0	0	0	0	0		0	0	0		0	0		0							
	Ethylbenzene		0.069	0.036	0.197	0.031	0.06	0.017		0.041	0.093	0.236		0.09	0.205		0.02						
	Ethylene dibromide		0	0	0	0	0		0	0	0		0	0		0							
	Ethylene dichloride		0	0	0.028	0	0		0	0	0		0	0		0							
	Hexachlorobutadiene		0	0	0	0	0		0	0	0		0	0		0							
	Methyl chloroform		0.041	0.016	0.016	0.017	0.013	0.019		0.037	0.039	0.026		0.028	0.028		0.037						
	Methyl isobutyl ketone		0.62	0.311	0.291	0.537	0.437	0.39		0.541	0.353	0.641		0.298	0.428		0.204						
	Methyl methacrylate		0	0	0	0	0		0	0	0		0	0		0							
	Methyl tert-butyl ether		0	0	0	0	0		0	0	0		0	0		0							
o-Xylene		0.081	0.047	0.222	0.037	0.076	0.019		0.043	0.114	0.25		0.093	0.226		0.018							
Styrene		0.029	0.018	0.024	0.018	0.018	0.009		0.016	0.021	0.042		0.023	0.047		0.012							
Tetrachloroethylene		0.048	0.021	0.033	0.015	0.029	0.014		0.022	0.058	0.048		0.043	0.034		0							
Toluene		0.604	0.499	1.94	0.39	0.629	0.148		0.315	0.886	1.966		0.617	1.406		0.109							
Trichloroethylene		0	0	0	0	0		0	0	0.024		0	0		0								
Vinyl chloride		0.006	0.007	0.009	0	0	0		0	0	0.004		0	0		0							
Chicora Elementary School	1,1,2,2-Tetrachloroethane		0	0					0	0			0	0		0				0	0		
	1,1,2-Trichloroethane		0	0					0	0.01			0	0		0				0	0		
	1,1-Dichloroethane		0	0					0	0			0	0		0				0	0		
	1,1-Dichloroethylene		0	0					0	0			0	0		0				0	0		
	1,2,4-Trichlorobenzene		0	0					0	0			0	0		0				0	0		
	1,2,4-Trimethylbenzene		0.05	0.056					0.254	0.129			0.028	0.025	0.034		0.064			0.238	0.099		
	1,2-Dichloropropane		0	0					0	0			0	0		0				0	0		
	1,3-Butadiene		0.019	0.025					0.282	0.1			0.012	0.02	0.026		0.033			0.067	0.047		
	1,4-Dichlorobenzene		0.016	0.037					0.066	0.069			0.008	0.016	0.025		0.036			0.029	0.028		
	Acetonitrile		0.236	0.333					9.21	5.65			0.235	0.192	0.1		0.181			0.352	0.186		
	Acrolein		1.1	1.54					9.34	5.04			1.28	0.699	0.456		0.516			5.018	0.44		
	Acrylonitrile		0	0.068					119	46			0.359	0.862	0		0.592			0.732	0		
	Benzene		0.152	0.174					2.08	0.787			0.159	0.221	0.203		0.238			0.653	0.39		
	Benzyl chloride		0	0					0	0.01			0	0		0				0	0		
	Bromoform		0	0					0.023	0.01			0	0		0				0	0		

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Chicora Elementary School	Bromomethane		0.015	0.017					0.527	0.192				0.016		0.024	0.011		0.017		0.036		0.032
	Carbon disulfide		0.392	0.089					0.663	0.325				0.034		0.082	0.016		0.043		0.122		0.043
	Carbon tetrachloride		0.156	0.103					0.158	0.27				0.204		0.219	0.131		0.122		0.199		0.239
	Chlorobenzene		0	0					0.149	0.074				0		0	0		0		0		0
	Chloroethane		0.015	0.009					0.262	0.131				0.011		0.005	0.005		0.014		0.032		0
	Chloroform		0.021	0.022					0.392	0.209				0.035		0.045	0.024		0.036		0.048		0.106
	Chloromethane		0.946	0.754					6.06	3.63				0.93		1.02	0.576		0.708		1.67		1.462
	Chloroprene		0	0					0	0				0		0	0		0		0		0
	Dichloromethane		0.087	0.142					569	261				2.11		6.65	0.084		2.65		4.687		1.225
	Ethyl acrylate		0	0					0	0				0		0	0		0		0		0
	Ethylbenzene		0.035	0.046					14.5	4.35				0.051		0.044	0.037		0.073		0.295		0.248
	Ethylene dibromide		0	0					0	0				0		0	0		0		0		0
	Ethylene dichloride		0	0					0	0.05				0		0	0		0		0		0
	Hexachlorobutadiene		0	0					0	0				0		0	0		0		0		0
	Methyl chloroform		0.015	0.012					0.404	0.107				0.018		0.021	0.015		0.012		0.02		0.029
	Methyl isobutyl ketone		0.462	0.574					0.919	0.489				0.316		0.109	0.089		0.104		0.168		0.244
	Methyl methacrylate		0	0					0	0				0		0	0		0		0		0
	Methyl tert-butyl ether		0	0					0	0.01				0		0	0		0		0		0
	o-Xylene		0.041	0.05					3.02	1.128				0.048		0.034	0.046		0.074		0.285		0.219
	Styrene		0.022	0.023					25.1	25.7				0.026		0.03	0.009		0.032		0.095		0.04
	Tetrachloroethylene		0.035	0.038					0.286	0.127				0.018		0.014	0.031		0.019		0.025		0.062
	Toluene		0.415	0.512					71	62.9				0.266		0.443	0.303		0.859		2.62		0.819
Trichloroethylene		0	0					1.31	0.415				0		0.04	0		0.031		0.034		0	
Vinyl chloride		0.007	0					0.015	0.01				0		0	0		0		0		0	
Clairton Educational Center	1,1,2,2-Tetrachloroethane								0.004	0			0	0				0		0		0	
	1,1,2-Trichloroethane								0	0			0	0				0		0		0	
	1,1-Dichloroethane								0.005	0			0	0				0		0		0	
	1,1-Dichloroethylene								0.009	0			0	0				0		0		0	
	1,2,4-Trichlorobenzene								0	0			0	0				0		0		0	
	1,2,4-Trimethylbenzene								0.08	0.066			0.04	0.038				0.019		0.088		0.029	
	1,2-Dichloropropane								0.005	0			0	0				0		0		0	
	1,3-Butadiene								0.043	0.024			0.038	0.017				0.034		0.049		0.025	
	1,4-Dichlorobenzene								0.024	0.027			0.026	0.022				0.011		0.013		0.008	
	Acetonitrile								0.249	0.192			0.231	0.146				0.279		0.104		0.102	
	Acrolein								0.443	0.635			0.64	0.42				0.334		0.373		0.253	
	Acrylonitrile								0.021	0.402			0.181	0				0.045		0		0	
	Benzene								1.74	0.429			2.51	0.214				0.156		0.308		0.468	
	Benzyl chloride								0.007	0			0	0				0		0		0	
	Bromoform								0.006	0			0	0				0		0		0	
	Bromomethane								0.01	0.011			0.018	0.012				0.014		0.009		0.013	
	Carbon disulfide								0.057	0.024			0.041	0.033				0.017		0.027		0.093	
	Carbon tetrachloride								0.11	0.105			0.118	0.216				0.126		0.113		0.154	
	Chlorobenzene								0.002	0			0	0				0		0		0	
	Chloroethane								0.01	0.013			0.011	0				0.006		0.014		0.009	
	Chloroform								0.04	0.025			0.027	0.024				0		0.029		0.025	
	Chloromethane								0.578	0.569			0.596	0.763				1		0.714		0.614	
	Chloroprene								0.004	0.01			0	0				0		0		0	
	Dichloromethane								0.338	1.64			1.01	0.43				0.198		0.288		0.244	
	Ethyl acrylate								0.003	0			0	0				0		0		0	
	Ethylbenzene								0.115	0.488			0.178	0.055				0.021		0.135		0.047	
	Ethylene dibromide								0	0			0	0				0		0		0	
	Ethylene dichloride								0.015	0.026			0	0				0		0		0	
	Hexachlorobutadiene								0	0			0	0				0		0		0	
	Methyl chloroform								0.014	0.014			0.016	0.023				0.013		0.015		0.02	

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Clairton Educational Center	Methyl isobutyl ketone									0.152	0.24		0.156	0.143					0.061		0.114		0.033
	Methyl methacrylate									0.088	0		0	0					0		0		0
	Methyl tert-butyl ether									0.002	0		0	0					0		0		0
	o-Xylene									0.12	0.173		0.086	0.05					0.022		0.105		0.034
	Styrene									0.053	0.078		0.061	0.014					0.01		0.037		0.013
	Tetrachloroethylene									0.08	0.034		0.031	0.019					0.012		0.023		0.047
	Toluene									1.37	1.32		0.925	0.272					0.164		0.768		0.251
	Trichloroethylene									0.022	0.011		0	0					0		0		0
Colvin Elementary	Vinyl chloride									0	0.004		0.005	0					0.007		0		0.007
	1,1,2,2-Tetrachloroethane						0			0	0	0		0			0				0		0
	1,1,2-Trichloroethane						0			0	0	0		0			0				0		0
	1,1-Dichloroethane						0			0	0	0		0			0				0		0
	1,1-Dichloroethylene						0			0	0	0		0			0				0		0
	1,2,4-Trichlorobenzene						0			0	0	0		0			0				0		0
	1,2,4-Trimethylbenzene						0.013			0.018	0.015	0.016		0.02			0.054				0.162		0
	1,2-Dichloropropane						0			0	0	0		0			0				0		0
	1,3-Butadiene						0.003			0.015	0.018	0.03		0.015			0.032				0.146		0
	1,4-Dichlorobenzene						0			0.012	0.01	0.012		0.012			0.015				0.026		0
	Acetonitrile						0.245			0.155	0.5	1.17		0.386			0.164				0.086		0
	Acrolein						0.698			1.34	1.93	2.51		0.972			0.423				0.229		0
	Acrylonitrile						0.079			0	2.69	12.7		3.26			0.025				0		0
	Benzene						0.086			0.123	0.189	0.321		0.123			0.181				0.648		0
	Benzyl chloride						0			0	0	0		0			0				0		0
	Bromoform						0			0	0	0		0			0				0		0
	Bromomethane						0.013			0.011	0.022	0.051		0.019			0.012				0.026		0
	Carbon disulfide						0.091			0.019	0.068	0.083		0.024			0.057				0.054		0
	Carbon tetrachloride						0.182			0.111	0.131	0.219		0.115			0.132				0.094		0
	Chlorobenzene						0			0	0	0		0			0				0		0
	Chloroethane						0.009			0.019	0.019	0.04		0.015			0.009				0.008		0
	Chloroform						0.019			0.019	0.023	0.059		0.026			0.022				0.024		0
Chloromethane						0.696			0.56	0.826	1.52		0.707			0.618				0.553		0	
Chloroprene						0			0	0	0		0			0				0		0	
Dichloromethane						0.261			0.232	11.5	66.3		14.7			0.235				0.084		0	
Ethyl acrylate						0			0	0	0		0			0				0		0	
Ethylbenzene						0.011			0.029	0.114	0.351		0.131			0.051				0.192		0	
Ethylene dibromide						0			0	0	0		0			0				0		0	
Ethylene dichloride						0			0	0	0		0			0				0		0	
Hexachlorobutadiene						0			0	0	0		0			0				0		0	
Methyl chloroform						0.018			0.011	0.015	0.026		0.013			0.016				0.012		0	
Methyl isobutyl ketone						0.124			0.331	0.461	0.37		0.12			0.105				0.062		0	
Methyl methacrylate						0			0	0	0		0			0				0		0	
Methyl tert-butyl ether						0			0	0	0		0			0				0		0	
o-Xylene						0.009			0.027	0.051	0.122		0.054			0.057				0.202		0	
Styrene						0			0.011	0.114	0.608		0.195			0.014				0.038		0	
Tetrachloroethylene						0			0.028	0.632	0.033		0.023			0.02				0.038		0	
Toluene						0.078			0.238	1.7	5.65		1.6			0.373				1.33		0	
Trichloroethylene						0			0	0.095	0.065		0.016			0.008				0		0	
Vinyl chloride						0			0	0	0		0			0.006				0		0	
Crabbe School	1,1,2,2-Tetrachloroethane		0	0	0	0	0	0		0	0	0		0	0	0				0		0	
	1,1,2-Trichloroethane		0	0	0.013	0	0	0		0	0	0		0	0	0					0		0
	1,1-Dichloroethane		0	0	0	0	0	0		0	0	0		0	0	0					0		0
	1,1-Dichloroethylene		0	0	0	0	0	0		0	0	0		0	0	0					0		0
	1,2,4-Trichlorobenzene		0	0	0	0	0	0		0	0	0		0	0	0					0		0
	1,2,4-Trimethylbenzene		0.042	0.058	0.097	0.029	0.051	0.014		0.088	0.08	0.054		0.038	0.095		0.009				0		0

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																						
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Crabbe School	1,2-Dichloropropane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1,3-Butadiene	0.02	0.025	0.042	0.018	0.036	0.014	0.028	0.046	0.027	0.023	0.04	0.01	0.019	0	0.008								
	1,4-Dichlorobenzene	0.016	0.021	0.042	0.027	0.027	0.015	0.03	0.024	0.02	0.019	0	0.008											
	Acetonitrile	0.266	0.279	0.27	0.275	0.297	0.236	0.268	0.213	0.172	0.204	0.228	0.152	0.742	1.22	0.408								
	Acrolein	1.02	0.769	1.61	1.22	2.31	2.76	0.742	0.928	0.86	0.742	1.22	0.408											
	Acrylonitrile	0	0	0	0	0	0.103	0	0	0	0	0	0											
	Benzene	0.272	0.292	0.815	0.17	0.747	0.109	0.188	0.376	0.504	0.208	0.665	0.115											
	Benzyl chloride	0	0	0	0	0	0	0	0	0	0	0	0											
	Bromoform	0	0	0	0	0	0	0	0	0	0	0	0											
	Bromomethane	0.011	0.014	0.011	0.013	0.014	0.011	0.01	0.013	0.01	0.012	0.013	0.012											
	Carbon disulfide	0.214	0.125	0.063	0.039	0.086	0.027	0.25	0.049	0.03	0.025	0.022	0.015											
	Carbon tetrachloride	0.117	0.122	0.115	0.124	0.138	0.102	0.115	0.134	0.101	0.117	0.112	0.234											
	Chlorobenzene	0	0	0	0	0	0	0	0	0	0	0	0											
	Chloroethane	0.01	0.013	0.025	0.015	0.023	0.019	0.013	0.014	0.013	0.013	0	0.007											
	Chloroform	0.024	0.032	0.034	0.026	0.038	0.024	0.027	0.043	0.025	0.03	0.026	0.029											
	Chloromethane	0.663	0.793	0.596	0.685	0.68	0.601	0.615	0.632	0.55	0.592	0.643	0.754											
	Chloroprene	0	0	0	0	0	0	0	0	0	0	0	0											
	Dichloromethane	0.792	0.211	0.356	0.102	0.109	0.325	0.243	0.27	0.064	0.355	0.521	0.091											
	Ethyl acrylate	0	0	0	0	0	0	0	0	0	0	0	0											
	Ethylbenzene	0.043	0.039	0.096	0.033	0.056	0.024	0.034	0.067	0.06	0.047	0.105	0.013											
	Ethylene dibromide	0	0	0	0	0	0	0	0	0	0	0	0											
	Ethylene dichloride	0	0	0	0	0	0	0	0	0	0	0	0											
	Hexachlorobutadiene	0	0	0	0	0.008	0	0	0	0	0	0	0											
	Methyl chloroform	0.014	0.014	0.015	0.016	0.017	0.014	0.013	0.02	0.012	0.017	0.012	0.021											
	Methyl isobutyl ketone	0.253	0.222	0.63	0.406	0.776	0.585	0.245	0.22	0.194	0.205	0.251	0.075											
	Methyl methacrylate	0	0	0	0	0	0	0	0	0	0	0	0											
	Methyl tert-butyl ether	0	0	0	0	0	0	0	0	0	0	0	0											
	o-Xylene	0.054	0.051	0.109	0.037	0.071	0.019	0.044	0.082	0.062	0.048	0.13	0.011											
	Styrene	0.016	0.016	0.038	0.018	0.024	0.036	0.013	0.021	0.024	0.016	0.029	0.006											
	Tetrachloroethylene	0.017	0.014	0.04	0.024	0.03	0.014	0.022	0.043	0.027	0.038	0.021	0.021											
	Toluene	0.224	0.35	0.699	0.248	0.526	0.203	0.309	0.831	0.444	0.376	0.625	0.073											
	Trichloroethylene	0.3	0	0	0	0.012	0	0	0	0.004	0	0	0											
Vinyl chloride	0.005	0.011	0.009	0	0.009	0.009	0.011	0.009	0.008	0.006	0	0												
Follansbee Middle School - Jefferson Primary School	1,1,2,2-Tetrachloroethane	0	0	0	0	0	0	0	0	0	0	0												
	1,1,2-Trichloroethane	0	0	0	0	0	0	0	0	0	0	0												
	1,1-Dichloroethane	0	0	0	0	0	0	0	0	0	0	0												
	1,1-Dichloroethylene	0	0	0	0	0	0	0	0	0	0	0												
	1,2,4-Trichlorobenzene	0	0	0	0	0	0	0	0	0	0	0												
	1,2,4-Trimethylbenzene	0.033	0.064	0.041	0.02	0.014	0.016	0.06	0.017	0.017	0.017	0.017												
	1,2-Dichloropropane	0	0	0	0	0	0	0	0	0	0	0												
	1,3-Butadiene	0.031	0.038	0.037	0.009	0.008	0.016	0.037	0.009	0.008	0.016	0.0095	0.022											
	1,4-Dichlorobenzene	0.015	0.022	0.025	0.008	0	0.006	0.015	0.022	0.015	0.015	0.015	0											
	Acetonitrile	0.446	0.543	0.818	0.187	0.12	0.137	0.446	0.543	0.818	0.187	0.12	0.137											
	Acrolein	1.75	1.56	1.02	1.07	0.397	0.563	1.75	1.56	1.02	1.07	0.397	0.563											
	Acrylonitrile	3.81	5.6	14.2	0	0	0	3.81	5.6	14.2	0	0	0											
	Benzene	1.29	2.43	0.328	0.208	0.529	1.12	1.29	2.43	0.328	0.208	0.529	1.12											
	Benzyl chloride	0	0	0	0	0	0	0	0	0	0	0	0											
	Bromoform	0	0	0	0	0	0	0	0	0	0	0	0											
	Bromomethane	0.015	0.015	0.024	0.012	0.011	0.014	0.015	0.015	0.024	0.012	0.011	0.014											
	Carbon disulfide	0.068	1.38	0.245	0.029	0.023	0.026	0.068	1.38	0.245	0.029	0.023	0.026											
	Carbon tetrachloride	0.136	0.121	0.109	0.204	0.195	0.132	0.136	0.121	0.109	0.204	0.195	0.132											
	Chlorobenzene	0.159	0.172	0.127	0	0	0	0.159	0.172	0.127	0	0	0											
	Chloroethane	0.023	0.026	0.047	0.009	0.012	0.01	0.023	0.026	0.047	0.009	0.012	0.01											
	Chloroform	0.054	0.05	0.053	0.031	0.019	0.023	0.054	0.05	0.053	0.031	0.019	0.023											

## Appendix A: Invalidated VOC Data By School

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*(All sample values expressed in parts per billion)*

Sum of Sample Value	Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
School Name	Pollutant																							
Follansbee Middle School - Jefferson Primary School	Chloromethane						0.858	0.799					1.12	0.761		0.664			0.62		0.597		0.622	
	Chloroprene						0	0					0	0		0			0		0		0	
	Dichloromethane						18.4	22.2					56.6	0.705		0.306			0.268		0.082		0.072	
	Ethyl acrylate						0	0					0	0		0			0		0		0	
	Ethylbenzene						0.081	0.104					0.117	0.026		0.016			0.025		0.068		0.028	
	Ethylene dibromide						0	0					0	0		0			0		0		0	
	Ethylene dichloride						0	0					0	0		0			0		0		0	
	Hexachlorobutadiene						0	0					0	0		0			0		0		0	
	Methyl chloroform						0.017	0.014					0.017	0.023		0.016			0.016		0.012		0.012	
	Methyl isobutyl ketone						0.264	0					0.105	0.225		0.125			0.071		0.125		0.018	
	Methyl methacrylate						0	0					0	0		0			0		0		0	
	Methyl tert-butyl ether						0	0					0	0		0			0		0		0	
	o-Xylene						0.057	0.081					0.055	0.027		0.018			0.026		0.093		0.027	
	Styrene						0.268	0.397					0.947	0.012		0.013			0.017		0.078		0.01	
	Tetrachloroethylene						0.074	0.074					0.059	0.017		0.007			0.009		0.017		0.012	
	Toluene						21.1	19.9					11.6	0.23		0.144			0.304		1.18		0.178	
	Trichloroethylene						0.03	0.026					0.066	0		0			0		0		0	
	Vinyl chloride						0	0					0	0		0			0.003		0		0	
	Harriet Tubman Middle School	1,1,2,2-Tetrachloroethane						0																
		1,1,2-Trichloroethane						0																
1,1-Dichloroethane							0																	
1,1-Dichloroethylene							0																	
1,2,4-Trichlorobenzene							0																	
1,2,4-Trimethylbenzene							0.026																	
1,2-Dichloropropane							0																	
1,3-Butadiene							0.015																	
1,4-Dichlorobenzene							0.009																	
Acetonitrile							4.33																	
Acrolein							0.622																	
Acrylonitrile							0.3																	
Benzene							0.129																	
Benzyl chloride							0																	
Bromoform							0																	
Bromomethane							0.03																	
Carbon disulfide							0.067																	
Carbon tetrachloride							0.163																	
Chlorobenzene							0																	
Chloroethane							0.012																	
Chloroform							0.037																	
Chloromethane							0.744																	
Chloroprene							0																	
Dichloromethane							2.22																	
Ethyl acrylate							0																	
Ethylbenzene							0.096																	
Ethylene dibromide							0																	
Ethylene dichloride							0																	
Hexachlorobutadiene						0																		
Methyl chloroform						0.017																		
Methyl isobutyl ketone						0.114																		
Methyl methacrylate						0																		
Methyl tert-butyl ether						0																		
o-Xylene						0.086																		
Styrene						0.136																		
Tetrachloroethylene						0.026																		

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Harriet Tubman Middle School	Toluene						0.402																
	Trichloroethylene						0.022																
	Vinyl chloride						0																
Hatcher School	1,1,2,2-Tetrachloroethane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1,2-Trichloroethane	0	0	0	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1-Dichloroethane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1-Dichloroethylene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,2,4-Trichlorobenzene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,2,4-Trimethylbenzene	0.052	0.072	0.086	0.046	0.049	0.006		0.026	0.07	0.012		0.049	0.023		0.014							
	1,2-Dichloropropane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,3-Butadiene	0.017	0.031	0.037	0.018	0.032	0.006		0.017	0.039	0.008		0.018	0.016		0.011							
	1,4-Dichlorobenzene	0.023	0.028	0.029	0.032	0.023	0.006		0.017	0.022	0.008		0.02	0.01		0.01							
	Acetonitrile	0.233	0.289	0.242	0.223	0.271	0.236		0.2	0.158	0.156		0.167	0.158		0.145							
	Acrolein	1.2	1.36	1.16	1.37	1.6	2.97		1.28	0.697	0.462		0.553	0.711		0.365							
	Acrylonitrile	0	0	0	0.221	0	0		0.374	0.112	0		0.252	0		0.063							
	Benzene	0.16	0.381	0.495	0.165	0.727	0.082		0.152	0.338	0.123		0.192	0.312		0.074							
	Benzyl chloride	0	0	0	0	0	0		0	0	0		0	0		0							
	Bromoform	0	0	0	0	0	0		0	0	0		0	0		0							
	Bromomethane	0.012	0.012	0.015	0.012	0.014	0.012		0.012	0.011	0.011		0.014	0.012		0.015							
	Carbon disulfide	0.092	0.092	0.395	0.073	0.066	0.028		0.096	0.102	0.014		0.078	0.019		0.023							
	Carbon tetrachloride	0.109	0.131	0.128	0.12	0.199	0.129		0.11	0.131	0.113		0.114	0.223		0.152							
	Chlorobenzene	0	0	0	0	0	0		0	0	0		0	0		0							
	Chloroethane	0.008	0.018	0.013	0.016	0.015	0.016		0.017	0.014	0.008		0.01	0.008		0.01							
	Chloroform	0.031	0.032	0.041	0.021	0.063	0.031		0.021	0.038	0.02		0.025	0.032		0.026							
	Chloromethane	0.615	0.733	0.67	0.646	0.806	0.649		0.607	0.697	0.603		0.591	0.764		0.697							
	Chloroprene	0	0	0	0	0	0		0	0	0		0	0		0							
	Dichloromethane	8.64	0.168	0.379	0.977	0.732	0.256		1.69	0.546	0.148		0.905	1.92		0.468							
	Ethyl acrylate	0	0	0	0	0	0		0	0	0		0	0		0							
	Ethylbenzene	0.04	0.053	0.06	0.049	0.061	0.013		0.039	0.058	0.022		0.054	0.036		0.018							
	Ethylene dibromide	0	0	0	0	0	0		0	0	0		0	0		0							
	Ethylene dichloride	0	0	0	0	0	0		0	0	0		0	0		0							
	Hexachlorobutadiene	0	0	0	0	0	0		0	0	0		0	0		0							
	Methyl chloroform	0.012	0.015	0.016	0.013	0.021	0.014		0.014	0.025	0.012		0.013	0.019		0.018							
	Methyl isobutyl ketone	0.266	0.244	0.2	0.564	0.344	0.374		0.296	0.108	0.085		0.097	0.153		0.112							
	Methyl methacrylate	0	0	0	0	0	0		0	0	0		0	0		0							
Methyl tert-butyl ether	0	0	0	0	0	0		0	0	0		0	0		0								
o-Xylene	0.058	0.065	0.067	0.044	0.064	0.01		0.035	0.067	0.017		0.056	0.032		0.018								
Styrene	0.016	0.024	0.023	0.039	0.019	0		0.035	0.038	0.008		0.025	0.015		0.009								
Tetrachloroethylene	0.01	0.031	0.028	0.031	0.03	0.015		0.017	0.031	0.016		0.026	0.011		0.01								
Toluene	0.269	0.384	0.546	0.513	0.679	0.166		0.493	0.495	0.615		0.782	0.305		0.21								
Trichloroethylene	0	0.009	0	0.021	0	0		0	0	0		0	0		0.007								
Vinyl chloride	0.004	0.009	0.011	0	0	0		0	0.007	0		0	0		0								
Intermediate School 143	1,1,2,2-Tetrachloroethane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1,2-Trichloroethane	0	0	0	0	0.003	0	0	0	0	0	0	0	0	0	0	0	0	0.011	0	0	0	0
	1,1-Dichloroethane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1-Dichloroethylene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,2,4-Trichlorobenzene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,2,4-Trimethylbenzene	0.087			0.034	0.07	0.104		0.055	0.035	0.016		0.036	0.078		0.063	0.012				0.14		0.024
	1,2-Dichloropropane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,3-Butadiene	0.047			0.024	0.054	0.061		0.07	0.038	0.024		0.035	0.119		0.064	0.009				0.132		0.028
	1,4-Dichlorobenzene	0.123			0.052	0.144	0.182		0.157	0.096	0.037		0.064	0.127		0.072	0.009				0.109		0.033
	Acetonitrile	0.302			0.348	0.293	0.276		0.283	0.235	0.165		0.138	0.264		0.153	0.204				0.136		0.099
	Acrolein	2.17			0.775	2.42	1.38		1.54	10.1	0.466		0.502	1.2		0.709	0.61				0.602		0.283
	Acrylonitrile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																						
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Intermediate School 143	Benzene		0.274		0.116	0.304	0.373		0.255	0.19	0.092		0.154	0.544		0.289		0.088			0.542		0.139	
	Benzyl chloride		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Bromoform		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Bromomethane		0.014		0.011	0.012	0.012		0.016	0.011	0.011		0.011	0.013		0.013		0.014			0.014		0.012	
	Carbon disulfide		0.048		0.036	0.043	0.264		0.033	0.075	0.017		0.024	0.039		0.018		0.009			0.013		0.021	
	Carbon tetrachloride		0.112		0.114	0.122	0.183		0.124	0.132	0.131		0.126	0.23		0.122		0.132			0.1		0.144	
	Chlorobenzene		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Chloroethane		0.014		0.01	0.016	0.014		0.009	0.074	0.008		0.008	0.012		0.011		0.022			0.012		0	
	Chloroform		0.049		0.04	0.073	0.091		0.058	0.061	0.032		0.038	0.105		0.048		0.017			0.072		0.043	
	Chloromethane		0.653		0.654	0.648	0.821		0.685	0.822	0.596		0.6	0.841		0.618		0.689			0.616		0.613	
	Chloroprene		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Dichloromethane		0.239		0.768	0.249	0.351		0.212	0.191	0.101		0.124	0.41		0.188		0.081			0.312		0.191	
	Ethyl acrylate		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Ethylbenzene		0.078		0.038	0.083	0.066		0.066	0.044	0.02		0.037	0.088		0.064		0.014			0.144		0.027	
	Ethylene dibromide		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Ethylene dichloride		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Hexachlorobutadiene		0		0	0	0		0	0	0		0	0		0		0			0		0	
	Methyl chloroform		0.014		0.014	0.02	0.025		0.019	0.014	0.013		0.015	0.025		0.015		0.014			0.014		0.013	
	Methyl isobutyl ketone		0.54		0.144	0.802	0.296		0.259	0.041	0.085		0.15	0.257		0.163		0.166			0.132		0.043	
	Methyl methacrylate		0.029		0.015	0	0		0	0.043	0		0	0		0		0			0.074		0	
	Methyl tert-butyl ether		0		0	0	0		0	0	0		0	0		0		0			0		0	
	o-Xylene		0.083		0.037	0.085	0.078		0.068	0.042	0.019		0.038	0.092		0.075		0.017			0.154		0.031	
	Styrene		0.027		0.012	0.02	0.021		0.018	0.008	0.006		0.013	0.024		0.017		0			0.034		0	
	Tetrachloroethylene		0.071		0.06	0.098	0.057		0.07	0.17	0.028		0.054	0.117		0.072		0.008			0.184		0.03	
	Toluene		0.598		0.588	0.753	0.538		0.554	0.331	0.159		0.298	0.688		0.542		0.13			1.14		0.224	
	Trichloroethylene		0		0	0	0		0	0	0.014		0	0		0.009		0			0.018		0	
	Vinyl chloride		0		0	0	0.013		0	0.011	0		0	0		0		0			0		0	
	Jefferson Elementary School	1,1,2,2-Tetrachloroethane								0	0	0												
		1,1,2-Trichloroethane								0	0	0												
1,1-Dichloroethane									0	0	0													
1,1-Dichloroethylene									0	0	0													
1,2,4-Trichlorobenzene									0	0	0													
1,2,4-Trimethylbenzene									0.024	0.017	0.023													
1,2-Dichloropropane									0	0	0													
1,3-Butadiene									0.025	0.018	0.023													
1,4-Dichlorobenzene									0.016	0.022	0.019													
Acetonitrile									0.292	0.188	0.326													
Acrolein									2.67	0.601	0.658													
Acrylonitrile									0	0.158	0.223													
Benzene									0.193	0.177	0.521													
Benzyl chloride									0	0	0													
Bromoform									0	0	0													
Bromomethane									0.022	0.018	0.019													
Carbon disulfide									0.09	0.528	0.069													
Carbon tetrachloride									0.158	0.123	0.168													
Chlorobenzene									0	0	0													
Chloroethane									0.049	0.062	0.013													
Chloroform									0.028	0.042	0.053													
Chloromethane									0.698	0.691	0.696													
Chloroprene									0	0	0													
Dichloromethane									0.722	0.748	1.04													
Ethyl acrylate									0	0	0													
Ethylbenzene									0.033	0.029	0.031													
Ethylene dibromide									0	0	0													



## Appendix A: Invalidated VOC Data By School

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*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Jefferson Elementary School	Ethylene dichloride								0	0	0												
	Hexachlorobutadiene								0	0	0												
	Methyl chloroform								0.018	0.015	0.019												
	Methyl isobutyl ketone								0.472	0.026	0.192												
	Methyl methacrylate								0	0	0												
	Methyl tert-butyl ether								0	0	0												
	o-Xylene								0.034	0.023	0.025												
	Styrene								0.018	0.016	0.025												
	Tetrachloroethylene								0.02	0.028	0.027												
	Toluene								0.32	0.239	0.304												
	Trichloroethylene								0	0	0												
Vinyl chloride								0.038	0.009	0.005													
Life Skills of Trumbull County - Academy of Arts and Humanities	1,1,2,2-Tetrachloroethane								0														
	1,1,2-Trichloroethane								0														
	1,1-Dichloroethane								0														
	1,1-Dichloroethylene								0														
	1,2,4-Trichlorobenzene								0														
	1,2,4-Trimethylbenzene								0.076														
	1,2-Dichloropropane								0														
	1,3-Butadiene								0.043														
	1,4-Dichlorobenzene								0.03														
	Acetonitrile								0.444														
	Acrolein								2.12														
	Acrylonitrile								0														
	Benzene								0.452														
	Benzyl chloride								0														
	Bromoform								0														
	Bromomethane								0.014														
	Carbon disulfide								0.038														
	Carbon tetrachloride								0.162														
	Chlorobenzene								0														
	Chloroethane								0.012														
	Chloroform								0.049														
	Chloromethane								0.706														
	Chloroprene								0														
	Dichloromethane								0.294														
	Ethyl acrylate								0														
	Ethylbenzene								0.092														
	Ethylene dibromide								0														
	Ethylene dichloride								0														
	Hexachlorobutadiene								0														
	Methyl chloroform								0.018														
	Methyl isobutyl ketone								0.264														
	Methyl methacrylate								0														
	Methyl tert-butyl ether								0														
o-Xylene								0.103															
Styrene								0.022															
Tetrachloroethylene								0.102															
Toluene								0.632															
Trichloroethylene								0															
Vinyl chloride								0															
Mabel Holmes Middle School	1,1,2,2-Tetrachloroethane								0				0	0		0		0		0		0	0
	1,1,2-Trichloroethane								0				0	0		0		0		0		0	0
	1,1-Dichloroethane								0				0	0		0		0		0		0	0

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*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Mabel Holmes Middle School	1,1-Dichloroethylene						0						0	0		0			0		0		0
	1,2,4-Trichlorobenzene						0						0	0		0			0		0		0
	1,2,4-Trimethylbenzene						0.052						0.064	0.124		0.029			0.06		0.066		0.034
	1,2-Dichloropropane						0						0	0		0			0		0		0
	1,3-Butadiene						0.03						0.06	0.106		0.037			0.069		0.088		0.079
	1,4-Dichlorobenzene						0.051						0.032	0.159		0.101			0.087		0.052		0.017
	Acetonitrile						0.286						0.525	0.432		0.395			0.433		0.447		0.108
	Acrolein						1.23						0.686	0.784		0.543			0.934		0.936		0.441
	Acrylonitrile						0						6.18	7.78		8.1			9.12		0		1.41
	Benzene						0.286						0.584	0.59		0.276			0.411		0.418		0.214
	Benzyl chloride						0						0	0		0			0		0		0
	Bromoform						0						0	0		0			0		0		0
	Bromomethane						0.011						1.87	0.015		0.022			0.029		0.018		0.01
	Carbon disulfide						0.053						0.29	0.029		0.022			0.026		0.019		0.013
	Carbon tetrachloride						0.157						0.216	0.122		0.123			0.124		0.094		0.099
	Chlorobenzene						0						0	0		0.017			0.018		0		0
	Chloroethane						0.015						0.055	0.024		0.025			0.032		0.024		0.045
	Chloroform						0.062						0.059	0.063		0.049			0.068		0.054		0.029
	Chloromethane						0.723						1.79	0.875		0.996			1.02		1.1		0.832
	Chloroprene						0						0	0		0			0		0		0
	Dichloromethane						0.204						42.5	35.6		44.7			49.4		46.5		8.63
	Ethyl acrylate						0						0	0		0			0		0		0
	Ethylbenzene						0.064						0.98	3.13		2.11			2.3		2.76		0.675
	Ethylene dibromide						0						0	0		0			0		0		0
	Ethylene dichloride						0						0	0.045		0			0		0		0
	Hexachlorobutadiene						0						0	0		0			0		0		0
	Methyl chloroform						0.021						0.021	0.014		0.018			0.019		0.014		0.013
	Methyl isobutyl ketone						0.389						0.156	0.13		0.084			0.17		0.137		0.02
	Methyl methacrylate						0						0	0		0			0		0		0
	Methyl tert-butyl ether						0						0	0.025		0			0		0.011		0
	o-Xylene						0.074						0.312	0.849		0.45			0.565		0.723		0.206
	Styrene						0.019						0.209	0.41		0.216			0.281		0.39		0.036
	Tetrachloroethylene						0.038						0.047	0.056		0.024			0.043		0.054		0.029
	Toluene						0.524						2.26	6.3		4.17			4.52		5.13		1.34
Trichloroethylene						0						0.05	0.046		0.048			0.085		0.05		0.019	
Vinyl chloride						0.004						0.034	0.007		0			0.009		0		0.003	
NW Harlee Elementary School	1,1,2,2-Tetrachloroethane												0	0		0				0		0	
	1,1,2-Trichloroethane												0	0		0				0		0	
	1,1-Dichloroethane												0	0		0				0		0	
	1,1-Dichloroethylene												0	0		0				0		0	
	1,2,4-Trichlorobenzene												0	0		0				0		0	
	1,2,4-Trimethylbenzene												0.028	0.064		0.02				0.01		0.056	
	1,2-Dichloropropane												0	0		0				0		0	
	1,3-Butadiene												0.028	0.049		0.02				0.016		0.042	
	1,4-Dichlorobenzene												0.073	0.083		0.02				0.012		0.042	
	Acetonitrile												0.189	0.19		0.148				0.127		0.262	
	Acrolein												0.786	0.616		1.04				0.189		0.251	
	Acrylonitrile												0.44	0.263		0				0		0	
	Benzene												0.152	0.162		0.138				0.073		0.231	
	Benzyl chloride												0	0		0				0		0	
	Bromoform												0	0		0				0		0	
	Bromomethane												0.015	0.016		0.015				0.011		0.017	
Carbon disulfide												0.022	0.025		0.018				0.014		0.036		
Carbon tetrachloride												0.119	0.122		0.234				0.126		0.117		

## Appendix A: Invalidated VOC Data By School

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*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
NW Harlee Elementary School	Chlorobenzene												0	0.012		0					0		0
	Chloroethane												0.016	0.054		0.01					0.017		0.012
	Chloroform												0.029	0.034		0.033					0.024		0.038
	Chloromethane												0.655	0.603		0.776					0.642		0.699
	Chloroprene												0	0		0					0		0
	Dichloromethane												1.34	1.2		0.253					0.171		1.74
	Ethyl acrylate												0	0		0					0		0
	Ethylbenzene												0.05	0.092		0.025					0.014		0.066
	Ethylene dibromide												0	0		0					0		0
	Ethylene dichloride												0	0		0					0		0
	Hexachlorobutadiene												0	0		0					0		0
	Methyl chloroform												0.017	0.016		0.024					0.013		0.016
	Methyl isobutyl ketone												0.183	0.071		0.153					0.015		0.033
	Methyl methacrylate												0	0		0					0		0
	Methyl tert-butyl ether												0	0		0					0		0
	o-Xylene												0.038	0.077		0.022					0.012		0.055
	Styrene												0.03	0.047		0					0		0.026
	Tetrachloroethylene												0.048	0.024		0.045					0.016		0.03
	Toluene												0.671	0.89		0.175					0.124		0.737
	Trichloroethylene												0.018	0.041		0.078					0.017		0.012
Vinyl chloride												0.005	0.012		0					0		0	
Paulsboro High School	1,1,2,2-Tetrachloroethane					0			0	0	0		0								0		0
	1,1,2-Trichloroethane					0			0	0	0		0								0		0
	1,1-Dichloroethane					0			0	0	0		0								0		0
	1,1-Dichloroethylene					0			0	0	0		0								0		0
	1,2,4-Trichlorobenzene					0			0	0	0		0								0		0
	1,2,4-Trimethylbenzene					0.044			0.037	0.038	0.019		0.036								0.054		
	1,2-Dichloropropane					0			0	0	0		0								0		0
	1,3-Butadiene					0.03			0.052	0.054	0.016		0.052								0.026		
	1,4-Dichlorobenzene					0.028			0.025	0.036	0.015		0.019								0.014		
	Acetonitrile					1.09			1.73	1.38	0.717		0.741								0.155		
	Acrolein					1.62			2.04	2.5	0.552		1.25								0.821		
	Acrylonitrile					11.7			21.2	19.1	8.58		9.26								0		
	Benzene					0.561			1.39	0.62	0.2		0.399								0.29		
	Benzyl chloride					0			0	0	0		0								0		0
	Bromoform					0			0	0	0		0								0		0
	Bromomethane					0.047			0.05	0.03	0.021		0.025								0.011		
	Carbon disulfide					0.077			0.174	0.049	0.047		0.035								0.017		
	Carbon tetrachloride					0.163			0.152	0.119	0.124		0.165								0.101		
	Chlorobenzene					0			0.031	0.022	0		0								0		0
	Chloroethane					0.053			0.07	0.04	0.028		0.03								0.021		
	Chloroform					0.085			0.097	0.074	0.051		0.066								0.028		
	Chloromethane					1.45			1.93	1.34	1.21		1.19								0.691		
	Chloroprene					0.005			0	0	0		0								0		0
	Dichloromethane					88.8			116	81	39.6		52.2								1.04		
	Ethyl acrylate					0			0	0	0		0								0		0
	Ethylbenzene					0.242			0.398	0.588	0.271		0.224								0.084		
	Ethylene dibromide					0			0	0	0		0								0		0
	Ethylene dichloride					0			0	0	0		0.027								0		0
	Hexachlorobutadiene					0			0	0	0		0								0		0
	Methyl chloroform					0.016			0.019	0.018	0.016		0.021								0.012		
Methyl isobutyl ketone					0.316			0.206	0.372	0.026		0.237								0.182			
Methyl methacrylate					0			0	0	0		0								0		0	
Methyl tert-butyl ether					0			0	0	0		0								0.009			

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*(All sample values expressed in parts per billion)*

Sum of Sample Value	Sample Number																						
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Paulsboro High School	o-Xylene						0.112		0.155	0.21	0.089		0.107										0.078
	Styrene						0.492		0.908	0.498	0.149		0.216										0.032
	Tetrachloroethylene						0.054		0.059	0.07	0.031		0.052										0.026
	Toluene						3.37		7.72	11	4.88		2.96										0.761
	Trichloroethylene						0.098		0.115	0.065	0.034		0.046										0
	Vinyl chloride						0.006		0.007	0	0.005		0.006										0
Riggins School	1,1,2,2-Tetrachloroethane		0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1,2-Trichloroethane		0		0	0	0.007		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1-Dichloroethane		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,1-Dichloroethylene		0		0	0.002	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,2,4-Trichlorobenzene		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,2,4-Trimethylbenzene		0.136		0.157	0.044	0.027		0.095	0.163	0.066	0.028	0.07	0.059	0.143	0.104	0.017			0.036		0.038	0.027
	1,2-Dichloropropane		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1,3-Butadiene		0.052		0.08	0.044	0.018		0.074	0.122	0.049	0.041	0.121	0.221	0.269	0.109	0.016			0.054		0.029	0.026
	1,4-Dichlorobenzene		0.076		0.076	0.021	0.016		0.017	0.044	0.028	0.016	0.028	0.019	0.028	0.067	0			0.017		0.012	0
	Acetonitrile		0.657		0.674	0.404	0.469		0.674	0.467	0.023	0.404	0.862	0.752	0.668	0.649	0.142			0.181		0.196	0.269
	Acrolein		3.02		3.4	1.01	3.52		1.356	1.7	0.618	1.23	1.728	1.216	1.195	1.703	0.452			0.374		4.25	0.56
	Acrylonitrile		0		0.345	0.096	0		0	0	0.18	2.6	5.07	2.21	1.84	0.011	0.277			0.314		0.907	0.317
	Benzene		0.484		0.496	2.36	0.289		1.954	2.59	1.1	2.44	5.75	15.88	16.88	2.97	0.161			2.74		0.274	0.307
	Benzyl chloride		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0
	Bromoform		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0
	Bromomethane		0.026		0.034	0.024	0.022		0.031	0.024	0.013	0.018	0.05	0.036	0.036	0.034	0.017			0.013		0.012	0.023
	Carbon disulfide		0.362		0.16	0.114	0.1		0.19	0.089	0.075	0.044	0.372	0.206	0.308	0.088	0.03			0.049		0.032	0.172
	Carbon tetrachloride		0.229		0.241	0.125	0.329		0.204	0.358	0.139	0.173	0.384	0.386	0.381	0.223	0.23			0.137		0.102	0.244
	Chlorobenzene		0		0	0	0		0	0	0	0	0	0	0.026	0	0			0		0	0
	Chloroethane		0.019		0	0.01	0.019		0	0.018	0.009	0.012	0.025	0.016	0.029	0.02	0			0.009		0.021	0.076
	Chloroform		0.044		0.056	0.015	0.052		0.052	0.084	0.031	0.041	0.079	0.055	0.058	0.063	0.026			0.036		0.018	0.05
	Chloromethane		1.394		1.434	0.706	1.283		1.161	1.565	0.748	0.874	2.062	2.09	1.827	1.415	0.781			0.674		0.717	1.559
	Chloroprene		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0
	Dichloromethane		0.955		1.037	0.392	0.435		14.213	1.212	1.23	16.1	36.424	15.992	17.822	17.15	2.28			1.58		5.06	2.817
	Ethyl acrylate		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0
	Ethylbenzene		0.126		0.13	0.03	0.032		0.101	0.143	0.073	0.063	0.11	0.075	0.119	0.19	0.023			0.07		0.057	0.048
	Ethylene dibromide		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0
	Ethylene dichloride		0		0	0.012	0		0.012	0	0	0	0	0	0	0	0	0	0	0		0	0
	Hexachlorobutadiene		0		0	0	0		0	0	0	0	0	0.006	0	0	0	0	0	0		0	0
Methyl chloroform		0.03		0.039	0.014	0.034		0.029	0.045	0.018	0.036	0.067	0.054	0.047	0.038	0.025			0.016		0.009	0.03	
Methyl isobutyl ketone		0.812		0.889	0.294	0.609		0.233	0.396	0.233	0.203	0.331	0.232	0.246	0.282	0.155			0.059		0.903	0.059	
Methyl methacrylate		0		0	0	0.033		0	0	0	0	0	0	0	0	0	0	0	0		0	0	
Methyl tert-butyl ether		0		0	0	0		0	0	0	0	0	0	0	0	0	0	0	0		0	0	
o-Xylene		0.124		0.129	0.04	0.035		0.084	0.159	0.067	0.04	0.08	0.085	0.17	0.13	0.021			0.048		0.041	0.039	
Styrene		0.087		0.07	0.047	0.023		0.114	0.056	0.056	0.155	0.313	0.171	0.207	0.274	0.027			0.032		0.131	0.034	
Tetrachloroethylene		0.095		0.072	0.02	0.022		0.061	0.059	0.038	0.046	0.043	0.03	0.054	0.063	0.01			0.017		0.017	0.025	
Toluene		0.81		1.281	0.553	0.301		0.911	1.122	0.596	0.712	1.334	1.792	2.41	2.086	0.169			0.63		0.544	0.454	
Trichloroethylene		0.014		0.056	0	0		0	0	0	0.031	0.051	0.038	0.049	0.044	0			0		0	0	
Vinyl chloride		0.017		0	0	0.004		0	0	0	0	0.014	0	0.014	0	0			0		0.011	0.017	
San Jacinto Elementary School - Deer Park Junior High School	1,1,2,2-Tetrachloroethane								0.007	0		0	0	0	0	0	0	0	0		0	0	
	1,1,2-Trichloroethane								0	0		0	0	0	0	0	0	0	0	0		0	0
	1,1-Dichloroethane								0	0		0	0	0	0	0	0	0	0	0		0	0
	1,1-Dichloroethylene								0	0		0	0	0	0	0	0	0	0	0		0	0.002
	1,2,4-Trichlorobenzene								0	0		0	0	0	0	0	0	0	0	0		0	0
	1,2,4-Trimethylbenzene											0.068	0.058		0.048	0.029		0.051		0.036		0.045	0.034
	1,2-Dichloropropane											0	0		0	0	0	0	0	0		0	0
	1,3-Butadiene											0.264	0.191		0.111	0.171		0.192		0.038		0.319	0.965
1,4-Dichlorobenzene											0.014	0.009		0.014	0.007		0.019		0.012		0.005	0.009	

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*(All sample values expressed in parts per billion)*

Sum of Sample Value	Sample Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
School Name	Pollutant																						
San Jacinto Elementary School - Deer Park Junior High School	Acetonitrile									0.395	0.231		0.335	0.33		0.818			3.87		0.275		0.325
	Acrolein									1.18	0.781		0.715	0.681		1.19			0.321		0.5		21
	Acrylonitrile									0	0		0	0		0.058			0		0		0
	Benzene									4.8	2.15		0.688	0.896		0.505			0.201		0.76		1.14
	Benzyl chloride									0	0		0	0		0			0		0		0
	Bromoform									0	0		0	0		0.006			0		0		0
	Bromomethane									0.017	0.017		0.014	0.014		0.015			0.014		0.01		0.014
	Carbon disulfide									0.083	0.051		0.042	0.038		0.065			0.029		0.024		0.088
	Carbon tetrachloride									0.176	0.171		0.194	0.188		0.117			0.133		0.105		0.102
	Chlorobenzene									0.035	0.032		0	0		0.015			0		0		0
	Chloroethane									0.007	0.061		0.027	0.02		0.016			0.01		0.01		0.031
	Chloroform									0.1	0.083		0.054	0.055		0.036			0.033		0.033		0.03
	Chloromethane									1.11	1.32		0.964	0.992		0.897			0.65		0.71		0.726
	Chloroprene									0	0		0	0		0			0		0		0
	Dichloromethane									5.26	0.581		0.38	0.212		0.361			3.43		0.095		0.319
	Ethyl acrylate									0	0		0	0		0			0		0		0
	Ethylbenzene									0.083	0.067		0.073	0.058		0.074			0.039		0.082		0.076
	Ethylene dibromide									0	0		0	0		0			0		0		0
	Ethylene dichloride									0.31	0.245		0	0.179		0.11			0		0		0
	Hexachlorobutadiene									0	0		0	0		0			0		0		0
	Methyl chloroform									0.023	0.027		0.019	0.02		0.013			0.017		0.012		0.012
	Methyl isobutyl ketone									0.315	0.069		0.096	0.25		0.227			0.056		0.078		0.065
	Methyl methacrylate									0.062	0.013		0	0.113		0			0		0.299		0.225
	Methyl tert-butyl ether									9.02	2.4		0.086	0.168		1.1			0		0		1.41
	o-Xylene									0.098	0.07		0.072	0.048		0.066			0.042		0.052		0.063
	Styrene									0.379	0.027		0.02	0.033		0.044			0.049		0.05		0.118
	Tetrachloroethylene									0.028	0.044		0.041	0.016		0.031			0.031		0.014		0.02
	Toluene									1.04	0.744		0.699	0.599		0.534			0.837		0.664		0.614
Trichloroethylene									0	0.023		0.018	0		0.013			0		0		0	
Vinyl chloride									0.021	0.069		0.035	0.056		0.046			0		0.038		0.028	
Santa Anita Christian Academy	1,1,2,2-Tetrachloroethane		0		0	0							0	0		0			0	0	0	0	0
	1,1,2-Trichloroethane		0		0	0							0	0		0			0	0	0	0	0
	1,1-Dichloroethane		0		0	0							0	0		0			0	0	0	0	0
	1,1-Dichloroethylene		0		0	0							0	0		0			0	0	0	0	0
	1,2,4-Trichlorobenzene		0		0	0							0	0		0			0	0	0	0	0
	1,2,4-Trimethylbenzene		0.087		0.069	0.061							0.11	0.129		0.046			0.071	0.082	0.141	0.102	0.33
	1,2-Dichloropropane		0		0	0							0	0		0			0	0	0	0	0
	1,3-Butadiene		0.07		0.048	0.051							0.075	0.176		0.038			0.102	0.053	0.117	0.082	0.222
	1,4-Dichlorobenzene		0.084		0.04	0.085							0.052	0.074		0.019			0.02	0.031	0.029	0.018	0.086
	Acetonitrile		0.321		0.44	0.945							0.497	0.804		0.264			0.405	0.187	0.31	0.277	0.33
	Acrolein		1.28		1.91	1.56							1.43	1.46		0.462			1.622	0.519	1.004	0.3	1.76
	Acrylonitrile		0		0	9.09							5.55	10.8		0.596			1.69	0	0	0	0
	Benzene		0.368		0.316	0.366							0.462	1.04		0.416			0.51	0.282	0.737	0.346	0.956
	Benzyl chloride		0		0	0							0	0		0			0	0	0	0	0
	Bromoform		0		0	0							0	0		0			0	0	0	0	0
	Bromomethane		0.017		0.032	0.034							0.033	0.054		0.103			0.028	0.029	0.063	0.027	0.021
	Carbon disulfide		0.031		0.054	0.067							0.022	0.154		0.183			0.039	0.023	0.038	0.019	0.033
	Carbon tetrachloride		0.132		0.108	0.108							0.114	0.14		0.201			0.376	0.127	0.203	0.212	0.106
	Chlorobenzene		0		0	0							0	0		0			0	0	0	0	0
	Chloroethane		0.011		0.02	0.025							0.028	0.047		0.03			0	0.009	0.016	0	0.02
	Chloroform		0.078		0.04	0.049							0.077	0.115		0.134			0.079	0.053	0.063	0.05	0.096
Chloromethane		0.71		0.73	0.878							0.906	1.31		0.87			1.917	0.655	1.356	1.387	0.952	
Chloroprene		0		0	0							0	0		0			0	0	0	0	0	
Dichloromethane		0.365		12.9	51							21.4	189		158			9.438	0.288	0.773	0.229	0.539	

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School Name	Pollutant	Sample Number																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Santa Anita Christian Academy	Ethyl acrylate		0		0	0							0	0		0			0	0	0	0	0	
	Ethylbenzene		0.127		0.182	0.455							0.376	0.556		0.109			0.146	0.088	0.204	0.123	0.365	
	Ethylene dibromide		0		0	0							0	0		0			0	0	0	0	0	
	Ethylene dichloride		0		0	0							0	0		0			0	0	0	0	0	
	Hexachlorobutadiene		0		0	0							0	0		0			0	0	0	0	0	
	Methyl chloroform		0.022		0.016	0.014							0.02	0.025		0.036			0	0.02	0.028	0.026	0.033	
	Methyl isobutyl ketone		0.277		0.497	0.302							0.282	0.257		0.05			0.236	0.124	0.202	0.223	0.165	
	Methyl methacrylate		0		0	0							0	0		0			0	0	0	0	0	
	Methyl tert-butyl ether		0		0	0							0	0		0			0	0	0	0	0	
	o-Xylene		0.149		0.141	0.206							0.235	0.39		0.084			0.111	0.115	0.212	0.137	0.448	
	Styrene		0.02		0.235	0.741							0.499	0.97		0.071			0.1	0.016	0.046	0.057	0.077	
	Tetrachloroethylene		0.05		0.042	0.057							0.064	0.08		0.044			0.038	0.03	0.077	0.041	0.108	
	Toluene		1.24		2.44	7.84							5.88	11.6		1.84			1.743	1.05	1.761	0.827	3.69	
	Trichloroethylene		0		0.031	0.065							0.042	0.104		0			0	0.018	0	0	0.025	
	Vinyl chloride		0		0	0							0	0		0			0	0.006	0	0	0	
	Soto Street Elementary School	1,1,2,2-Tetrachloroethane		0		0	0	0		0	0	0		0	0		0			0	0	0	0	0
		1,1,2-Trichloroethane		0		0	0	0		0	0	0		0	0		0			0	0	0	0	0
		1,1-Dichloroethane		0		0	0	0		0	0	0		0	0		0			0	0	0	0	0
1,1-Dichloroethylene			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
1,2,4-Trichlorobenzene			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
1,2,4-Trimethylbenzene			0.137		0.056	0.081	0.052		0.318	0.15	0.08		0.138	0.446		0.071			0.03	0.091	0.05	0.094	0.405	
1,2-Dichloropropane			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
1,3-Butadiene			0.104		0.072	0.056	0.066		0.162	0.09	0.111		0.132	0.258		0.058			0.014	0.075	0.066	0.074	0.293	
1,4-Dichlorobenzene			0.05		0.015	0.021	0.029		0.111	0.043	0.03		0.039	0.082		0.018			0.007	0.022	0.016	0.014	0.064	
Acetonitrile			0.33		0.244	0.366	0.412		0.47	0.356	0.346		0.274	0.234		0.19			0.379	0.159	0.212	0.186	0.335	
Acrolein			1.45		0.85	1.08	1.92		2.13	1.45	0.723		1.37	0.932		1.02			0.371	0.587	1.14	0.647	0.921	
Acrylonitrile			0		0	0.577	0		1.28	1.01	0.876		0.832	0.655		0.57			0.469	0	0.529	0.459	1.2	
Benzene			0.452		0.297	0.386	0.323		0.975	0.517	0.621		0.758	0.903		0.472			0.26	0.336	0.302	0.311	1.13	
Benzyl chloride			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
Bromoform			0		0	0	0.011		0.01	0	0.01		0	0		0.011			0	0	0	0	0	
Bromomethane			0.021		0.033	0.03	0.037		0.038	0.035	0.031		0.037	0.04		0.098			0.031	0.025	0.05	0.014	0.02	
Carbon disulfide			0.051		0.025	0.051	0.061		0.076	0.121	0.208		0.066	0.139		0.058			0.053	0.126	0.032	0.027	0.154	
Carbon tetrachloride			0.143		0.117	0.124	0.166		0.116	0.12	0.124		0.199	0.123		0.176			0.21	0.131	0.174	0.116	0.093	
Chlorobenzene			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
Chloroethane			0.013		0.008	0.017	0.029		0.023	0.021	0.031		0.037	0.019		0.018			0	0.006	0.019	0.009	0.016	
Chloroform			0.053		0.028	0.033	0.044		0.075	0.049	0.071		0.072	0.071		0.05			0.042	0.041	0.039	0.028	0.077	
Chloromethane			0.813		0.671	0.68	0.914		0.798	0.743	1.19		1.04	0.627		0.828			1.09	0.663	0.891	0.782	0.86	
Chloroprene			0		0	0	0		0	0	0.056		0	0		0			0	0	0	0	0	
Dichloromethane			4.44		1.7	2.24	4.03		4.87	3.7	3.41		3.56	2.5		2.67			1.98	0.201	1.79	1.61	4.53	
Ethyl acrylate			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
Ethylbenzene			0.174		0.088	0.098	0.088		0.382	0.204	0.142		0.167	0.448		0.111			0.041	0.088	0.071	0.118	0.384	
Ethylene dibromide			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
Ethylene dichloride			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
Hexachlorobutadiene			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
Methyl chloroform			0.022		0.017	0.016	0.022		0.024	0.021	0.034		0.03	0.019		0.021			0.009	0.021	0.023	0.014	0.018	
Methyl isobutyl ketone			0.417		0.178	0.426	0.368		0.639	0.563	0.077		0.206	0.401		0.228			0.026	0.106	0.255	0.217	0.237	
Methyl methacrylate			0.198		0	0	0		0	0	0.182		0	0		0			0	0	0	0	0	
Methyl tert-butyl ether			0		0	0	0		0	0	0		0	0		0			0	0	0	0	0	
o-Xylene			0.192		0.09	0.103	0.083		0.428	0.215	0.136		0.215	0.505		0.123			0.038	0.118	0.076	0.122	0.468	
Styrene			0.145		0.037	0.068	0.067		0.265	0.163	0.054		0.068	0.23		0.057			0.02	0.02	0.032	0.096	0.175	
Tetrachloroethylene			0.073		0.046	0.034	0.032		0.088	0.061	0.058		0.052	0.107		0.049			0.014	0.027	0.042	0.025	0.086	
Toluene			1.67		0.863	0.804	0.794		3.19	1.94	1.17		1.4	2.82		1.08			0.394	0.749	0.564	0.89	3.03	
Trichloroethylene			0.036		0.015	0	0.028		0.051	0.048	0.03		0.029	0.053		0.024			0	0	0	0	0.034	
Vinyl chloride			0		0	0	0.011		0.009	0.007	0		0.011	0.013		0.006			0	0	0	0	0.01	

## Appendix A: Invalidated VOC Data By School

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*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Spain Elementary School	1,1,2,2-Tetrachloroethane		0			0							0	0		0			0		0		0
	1,1,2-Trichloroethane		0			0							0	0		0			0		0		0
	1,1-Dichloroethane		0			0							0	0		0			0		0		0
	1,1-Dichloroethylene		0			0							0	0		0			0		0		0
	1,2,4-Trichlorobenzene		0			0							0	0		0			0		0		0
	1,2,4-Trimethylbenzene		0.062			0.059							0.057	0.062		0.094			0.052		0.108		0.082
	1,2-Dichloropropane		0			0							0	0		0			0		0		0
	1,3-Butadiene		0.024			0.034							0.045	0.037		0.045			0.035		0.068		0.082
	1,4-Dichlorobenzene		0.027			0.037							0.018	0.01		0.016			0.017		0.023		0
	Acetonitrile		0.331			0.499							0.308	0.328		0.318			0.201		0		0.189
	Acrolein		0.885			4.05							1.109	0.957		1.169			0.605		0.804		0.494
	Acrylonitrile		0			0							0	0.72		0.107			0.487		0.256		0
	Benzene		0.175			0.38							0.363	0.57		0.293			0.243		0.46		0.417
	Benzyl chloride		0			0							0	0		0			0		0		0
	Bromoform		0			0							0	0		0			0		0		0
	Bromomethane		0.01			0.016							0.023	0.03		0.023			0.024		0.022		0.023
	Carbon disulfide		0.099			0.065							0.11	0.076		0.054			0.072		0.025		0.022
	Carbon tetrachloride		0.108			0.132							0.376	0.457		0.258			0.261		0.205		0.223
	Chlorobenzene		0			0							0	0		0			0		0		0
	Chloroethane		0.013			0.02							0.053	0.03		0.015			0.016		0.015		0.056
	Chloroform		0.023			0.04							0.135	0.057		0.057			0.064		0.054		0.055
	Chloromethane		0.663			0.814							1.583	1.706		1.248			1.177		1.314		1.668
	Chloroprene		0			0							0	0		0			0		0		0
	Dichloromethane		7.4			6.86							0.479	6.372		7.612			3.506		2.427		1.123
	Ethyl acrylate		0			0							0	0		0			0		0		0
	Ethylbenzene		0.118			0.102							0.066	0.239		0.773			0.431		0.369		0.408
	Ethylene dibromide		0			0							0	0		0			0		0		0
	Ethylene dichloride		0			0							0	0		0			0		0		0
	Hexachlorobutadiene		0			0							0	0		0			0		0		0
	Methyl chloroform		0.012			0.017							0.039	0.046		0.028			0.026		0.011		0.029
	Methyl isobutyl ketone		0.241			0.806							0.215	0.17		0.255			0.118		0.265		0.038
	Methyl methacrylate		0			0							0	0		0			0		0		0
	Methyl tert-butyl ether		0			0							0	0		0			0		0		0
o-Xylene		0.064			0.076							0.07	0.109		0.229			0.14		0.168		0.164	
Styrene		0.129			0.094							0	0.025		0.062			0.03		0.03		0.034	
Tetrachloroethylene		0.025			0.032							0.013	0.033		0.035			0.027		0.037		0.052	
Toluene		2.01			1.48							0.439	0.951		2.244			1.091		1.363		1.318	
Trichloroethylene		0.047			0							0	0		0.04			0		0		0	
Vinyl chloride		0			0							0	0		0			0.005		0		0.004	
Sto-Rox Elementary School - Sto-Rox Middle School	1,1,2,2-Tetrachloroethane									0			0	0									
	1,1,2-Trichloroethane									0			0	0									
	1,1-Dichloroethane									0			0	0									
	1,1-Dichloroethylene									0.02			0	0									
	1,2,4-Trichlorobenzene									0			0	0									
	1,2,4-Trimethylbenzene									0.082			0.031	0.074									
	1,2-Dichloropropane									0			0	0									
	1,3-Butadiene									0.051			0.011	0.029									
	1,4-Dichlorobenzene									0.022			0	0.015									
	Acetonitrile									1.14			0.136	0.164									
	Acrolein									1.41			0.46	0.71									
	Acrylonitrile									15.9			0	0.045									
	Benzene									0.552			0.15	0.253									
	Benzyl chloride									0			0	0									
	Bromoform									0			0	0									

## Appendix A: Invalidated VOC Data By School

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*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Sto-Rox Elementary School - Sto-Rox Middle School	Bromomethane									0.083			0.011	0.011									
	Carbon disulfide									0.098			0.019	0.071									
	Carbon tetrachloride									0.122			0.125	0.129									
	Chlorobenzene									0			0	0									
	Chloroethane									0.028			0.019	0									
	Chloroform									0.098			0.022	0.027									
	Chloromethane									0.994			0.627	0.607									
	Chloroprene									0			0	0									
	Dichloromethane									347			0.69	0.619									
	Ethyl acrylate									0			0	0									
	Ethylbenzene									0.613			0.045	0.077									
	Ethylene dibromide									0			0	0									
	Ethylene dichloride									0			0	0									
	Hexachlorobutadiene									0			0	0									
	Methyl chloroform									0.014			0.013	0.012									
	Methyl isobutyl ketone									0.297			0.125	0.246									
	Methyl methacrylate									0			0	0									
	Methyl tert-butyl ether									0			0.002	0									
	o-Xylene									0.201			0.055	0.082									
	Styrene									2.18			0.058	0.037									
Tetrachloroethylene									0.066			0.019	0.041										
Toluene									6.27			0.213	0.55										
Trichloroethylene									0.629			0	0.014										
Vinyl chloride									0.005			0	0										
Temple Elementary School	1,1,2,2-Tetrachloroethane									0	0		0	0		0		0		0		0	
	1,1,2-Trichloroethane									0	0		0	0		0		0		0		0	
	1,1-Dichloroethane									0	0		0	0		0		0		0		0	
	1,1-Dichloroethylene									0	0		0	0		0		0		0		0	
	1,2,4-Trichlorobenzene									0	0		0	0		0		0		0		0	
	1,2,4-Trimethylbenzene									0.039	0.071		0.043	0.038		0.025		0.012		0.008		0.021	
	1,2-Dichloropropane									0	0		0	0		0		0		0		0	
	1,3-Butadiene									0.029	0.037		0.028	0.03		0.027		0.031		0.019		0.025	
	1,4-Dichlorobenzene									0.015	0.023		0.015	0.012		0.01		0		0.005		0.006	
	Acetonitrile									0.576	0.577		0.467	0.532		0.684		0.478		0.291		0.276	
	Acrolein									1.7	2.08		1.4	1.05		1.14		0.54		0.381		1.18	
	Acrylonitrile									5.88	6.89		5.69	5.26		9.42		6.53		2.38		2.21	
	Benzene									0.351	0.573		0.255	0.224		0.295		0.188		0.24		0.378	
	Benzyl chloride									0	0		0	0		0		0		0		0	
	Bromoform									0	0		0	0		0		0		0		0	
	Bromomethane									0.028	0.019		0.017	0.02		0.026		0.019		0.032		0.025	
	Carbon disulfide									0.037	0.035		0.051	0.052		0.026		0.025		0.036		0.094	
	Carbon tetrachloride									0.13	0.126		0.137	0.112		0.121		0.131		0.156		0.102	
	Chlorobenzene									0	0		0	0.011		0		0		0		0	
	Chloroethane									0.03	0.029		0.023	0.055		0.027		0.018		0.024		0.015	
	Chloroform									0.045	0.053		0.04	0.046		0.047		0.035		0.038		0.029	
	Chloromethane									0.986	1.29		1.02	1.26		1.12		1.13		0.93		0.803	
	Chloroprene									0	0		0	0		0		0		0		0	
	Dichloromethane									23.3	24.6		20.9	21.9		40.5		30.7		13.8		17.4	
	Ethyl acrylate									0	0		0	0		0		0		0		0	
	Ethylbenzene									0.184	0.342		0.333	0.334		0.227		0.133		0.057		0.097	
	Ethylene dibromide									0	0		0	0		0		0		0		0	
Ethylene dichloride									0	0.033		0	0		0		0		0		0		
Hexachlorobutadiene									0	0		0	0		0		0		0		0		
Methyl chloroform									0.015	0.014		0.013	0.011		0.013		0.014		0.016		0.011		



## Appendix A: Invalidated VOC Data By School

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*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Temple Elementary School	Methyl isobutyl ketone									0.459	0.484		0.433	0.125		0.141			0.093		0.021		0.245
	Methyl methacrylate									0	0		0	0		0			0		0		0
	Methyl tert-butyl ether									0	0		0	0		0			0		0		0
	o-Xylene									0.088	0.164		0.123	0.119		0.08			0.045		0.022		0.045
	Styrene									0.212	0.637		0.594	0.766		0.608			0.208		0.061		0.223
	Tetrachloroethylene									0.041	0.024		0.062	0.026		0.022			0.012		0.01		0.022
	Toluene									3.1	4.38		3.81	3.38		3.4			2.2		0.823		0.789
	Trichloroethylene									0.035	0.048		0.034	0.04		0.063			0.032		0.023		0.027
Vinyl chloride									0.006	0.004		0.008	0.006		0.006			0		0		0	
Whitwell Elementary School	1,1,2,2-Tetrachloroethane	0	0	0	0	0	0			0	0	0		0	0								
	1,1,2-Trichloroethane	0	0	0	0	0	0			0	0	0		0	0								
	1,1-Dichloroethane	0	0	0	0	0	0			0	0	0		0	0								
	1,1-Dichloroethylene	0	0	0	0	0	0			0	0	0		0	0								
	1,2,4-Trichlorobenzene	0	0	0	0	0	0			0	0	0		0	0								
	1,2,4-Trimethylbenzene	0.041	0.076	0.053	0.028	0.052	0.024			0.049	0.036	0.081		0.045	0.046		0.012						
	1,2-Dichloropropane	0	0	0	0	0	0			0	0	0		0	0								
	1,3-Butadiene	0.021	0.032	0.03	0.012	0.035	0.037			0.042	0.034	0.091		0.048	0.026		0.012						
	1,4-Dichlorobenzene	0.017	0.021	0.019	0.082	0.021	0.015			0.02	0.012	0.02		0.011	0.01		0.007						
	Acetonitrile	0.266	0.305	0.226	0.233	0.3	1.16			0.982	0.312	0.457		0.354	0.212		0.159						
	Acrolein	1.48	1.44	1.73	0.766	1.18	2.08			1.8	1.22	0.748		0.881	0.544		0.404						
	Acrylonitrile	0	0	0	0	0	0	19		18.3	3.07	2.29		0.878	0.943		0						
	Benzene	0.214	0.252	0.356	0.132	0.473	0.431			0.447	0.266	0.799		0.634	0.758		0.08						
	Benzyl chloride	0	0	0	0	0	0			0	0	0		0	0		0						
	Bromoform	0	0	0	0	0	0			0	0	0		0	0		0						
	Bromomethane	0.011	0.015	0.012	0.013	0.014	0.049			0.036	0.014	0.024		0.019	0.014		0.011						
	Carbon disulfide	0.058	0.221	0.076	0.058	0.061	0.064			0.114	0.024	0.046		0.028	0.04		0.01						
	Carbon tetrachloride	0.118	0.139	0.118	0.116	0.131	0.142			0.122	0.119	0.156		0.257	0.189		0.117						
	Chlorobenzene	0	0	0	0	0	0.022			0	0	0		0	0		0						
	Chloroethane	0.01	0.01	0.012	0.007	0.013	0.052			0.042	0.019	0.027		0.013	0.01		0.007						
	Chloroform	0.027	0.031	0.042	0.025	0.044	0.076			0.06	0.043	0.058		0.055	0.035		0.019						
	Chloromethane	0.735	0.778	0.543	0.626	0.699	0.921			0.816	0.59	0.818		1.05	0.775		0.604						
	Chloroprene	0	0	0	0	0	0			0	0	0		0	0		0						
	Dichloromethane	0.089	425	2.49	1.07	0.695	106			88.9	15.6	18.2		7.44	5.9		3.9						
	Ethyl acrylate	0	0	0	0	0	0			0	0	0		0	0		0						
	Ethylbenzene	0.037	0.054	0.048	0.032	0.061	0.554			0.676	0.125	0.194		0.104	0.078		0.04						
	Ethylene dibromide	0	0	0.004	0	0	0			0	0	0		0	0		0						
	Ethylene dichloride	0	0	0	0	0	0			0	0	0		0	0		0						
	Hexachlorobutadiene	0	0	0	0	0	0			0	0	0		0	0		0						
	Methyl chloroform	0.023	0.021	0.014	0.017	0.016	0.018			0.021	0.017	0.034		0.039	0.02		0.014						
	Methyl isobutyl ketone	0.197	0.302	0.445	0.198	0.201	0.167			0.3	0.225	0.087		0.168	0.154		0.073						
	Methyl methacrylate	0	0	0	0	0	0			0	0	0		0	0		0						
Methyl tert-butyl ether	0	0	0	0	0	0			0	0	0		0	0		0							
o-Xylene	0.045	0.064	0.058	0.033	0.072	0.184			0.245	0.075	0.141		0.084	0.075		0.025							
Styrene	0.013	0.03	0.017	0.012	0.017	0.81			1.22	0.081	0.152		0.043	0.057		0.053							
Tetrachloroethylene	0.018	0.022	0.021	0.022	0.027	0.041			0.043	0.02	0.042		0.026	0.019		0.01							
Toluene	0.254	0.488	0.435	0.195	0.506	11.3			11.3	1.65	1.72		0.648	0.685		0.428							
Trichloroethylene	0.012	0	0	0	0	0.83			0.716	0.096	0.134		0.052	0.066		0.041							
Vinyl chloride	0.005	0.012	0	0	0	0.043			0.038	0.011	0.015		0	0		0							
Young Scholars Academy	1,1,2,2-Tetrachloroethane												0	0		0			0		0		0
	1,1,2-Trichloroethane												0	0		0			0		0		0
	1,1-Dichloroethane												0	0		0			0		0		0
	1,1-Dichloroethylene												0	0		0			0		0		0
	1,2,4-Trichlorobenzene												0	0		0			0		0		0
	1,2,4-Trimethylbenzene												0.037	0.039		0.052			0.034		0.039		0.055

## Appendix A: Invalidated VOC Data By School

Data in this table were invalidated because samples were potentially contaminated. These data should not be used for any analytical or regulatory purpose.

*(All sample values expressed in parts per billion)*

Sum of Sample Value		Sample Number																					
School Name	Pollutant	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Young Scholars Academy	1,2-Dichloropropane												0	0		0			0		0		0
	1,3-Butadiene												0.04	0.042		0.052			0.077		0.054		0.082
	1,4-Dichlorobenzene												0.016	0.018		0.027			0.035		0.011		0.033
	Acetonitrile												0.246	0.558		0.427			0.589		0.269		0.712
	Acrolein												1.23	0.395		0.902			0.773		0.413		1.13
	Acrylonitrile												0	0		0			9.07		5		12
	Benzene												0.259	0.337		0.235			0.239		0.264		0.476
	Benzyl chloride												0	0		0			0		0		0
	Bromoform												0	0		0.007			0		0		0
	Bromomethane												0.029	0.017		0.022			0.019		0.013		0.027
	Carbon disulfide												0.107	0.494		0.032			0.028		0.042		0.045
	Carbon tetrachloride												0.174	0.226		0.135			0.123		0.09		0.11
	Chlorobenzene												0	0		0			0		0		0
	Chloroethane												0.036	0.028		0.018			0.031		0.017		0.035
	Chloroform												0.034	0.029		0.038			0.046		0.031		0.055
	Chloromethane												0.913	1.07		0.998			1.38		0.854		1.32
	Chloroprene												0	0		0			0		0		0
	Dichloromethane												0.138	0.796		13.4			34		20.5		53.8
	Ethyl acrylate												0	0		0			0		0		0
	Ethylbenzene												0.045	0.049		0.113			0.182		0.295		0.349
	Ethylene dibromide												0	0		0			0		0		0
	Ethylene dichloride												0	0		0			0		0		0
Hexachlorobutadiene												0	0		0			0		0		0	
Methyl chloroform												0.018	0.027		0.068			0.102		0.057		0.146	
Methyl isobutyl ketone												0.246	0.063		0.129			0.144		0.041		0.053	
Methyl methacrylate												0	0		0			0		0		0	
Methyl tert-butyl ether												0	0		0			0.091		0		0	
o-Xylene												0.049	0.048		0.079			0.079		0.104		0.132	
Styrene												0.022	0.045		0.19			0.481		0.745		0.843	
Tetrachloroethylene												0.032	0.027		0.058			0.048		0.039		0.077	
Toluene												0.355	0.376		1.27			4.97		7.48		6.79	
Trichloroethylene												0.018	0.022		0.028			0.054		0.029		0.061	
Vinyl chloride												0.017	0		0.006			0		0		0	