Tab C

I. Executive Summary

Occupants of some homes built with imported (Chinese) drywall have reported adverse health symptoms and corrosion of indoor metals. It has been hypothesized that the drywall emits sulfur-containing gases which are associated with the odor, health, and corrosion complaints, and that elevated levels of humidity and temperature increase the emission. To better assess these issues, the United States (US) Environmental Protection Agency Environmental Response Team (EPA/ERT) and the Florida Department of Health (FDOH) conducted indoor air testing on ten homes in Florida and Louisiana.[1]

This report reviews the air sampling results from a total of 6 Test homes and 4 Control homes[2] in Florida and Louisiana. The data obtained from these tests were evaluated to preliminarily identify if any chemicals are different in Test versus Control homes. It also evaluates whether some of these chemicals might be present at levels that potentially could be of health concern. This evaluation does not address individual health problems, if any, of occupants living or formerly living in the homes tested.

The EPA/ERT and FDOH samplings were also conducted to evaluate potential methods for collecting and identifying a variety of chemical compounds that might be present in the indoor and outdoor air of homes with Chinese drywall (Test homes) different from those found in Control homes. Information from this investigation will be considered to refine the sampling and testing procedures for homes with problems associated with Chinese drywall and may used for future studies. Although not a part of the Technical Team evaluation, Appendix K contains the EPA proposed sampling approach for drywall investigations. It should be noted that the preliminary sampling approach does not reflect upcoming results from other studies by the interagency task force, which may suggest changes in approach once those studies are complete.

While the results of this investigation provide some preliminary information on chemicals that might be linked with the health effects identified by occupants of affected homes, these results should be viewed as suggestive rather than conclusive until more comprehensive testing can be completed. The results presented in this report also should not be used to draw conclusions or make inferences regarding the condition of a specific residence or the impact of measured levels on materials or people within the homes tested or to the universe of homes known to contain Chinese drywall.[3]

A review of the data the technical team resulted in the following conclusions:

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[1]This report is a collaborative effort of staff (the Technical Team) from the federal and state agencies listed above as well as from the U.S. Department of Housing and Urban Development and the Virginia state Department of Health. The Technical Evaluation Team members are listed in Appendix M. Due to the interrelated nature of these investigations, these technical reports are being released in draft until the final results from further studies are available for interpretation. These studies are staff level documents and have not yet been reviewed or approved by the agencies participating in this investigatory effort.
[2]Control homes were selected on the basis that they did not meet the state of Florida's "case definition" of homes described below in the section on investigative design and methodologies.
[3]This technical report does not address nor differentiate between homes with corrosive Chinese drywall and homes containing Chinese drywall but lacking signs of corrosion.

- Based on these limited air sampling results no *obvious* differences between the types and amounts of compounds were found in the indoor air of Test versus Control homes.
- The majority of compounds found in the Test and Control homes are commonly found in U.S. homes. Indoor air monitoring in homes and chamber testing of emissions from building materials and furnishings (EPA 1997, Alevantis 2003, Colombo 1990, Hodgson 2000) have found similar levels of compounds.

- According to the growing number of reports to federal and state agencies as well as private consulting companies and laboratories, it was hypothesized that Chinese drywall emits reduced sulfur compounds, which are suspected to be the cause of metal corrosion, and possibly occupant reported symptoms. The three reduced sulfur compounds of greatest interest, hydrogen sulfide, carbon disulfide and carbonyl sulfide were rarely detected above method detection limits in this limited sampling of 10 homes. The peak hydrogen sulfide level was detected outdoors when a lawn sprinkler system was running outside a Florida home. The use of "reclaimed water" for sprinklers is associated with these hydrogen sulfide levels. The Technical Team recognizes this is a possible contribution to indoor air quality. Ongoing investigations and sampling in a larger number of homes should help to clarify the role that these compounds may play in reported symptoms and corrosion to metal components in homes.

- With few exceptions, the levels of formaldehyde and acetaldehyde were consistent with those found in newly manufactured homes in the U.S. and elsewhere. Formaldehyde levels found in Test and Control homes were not different. The small number of homes tested for formaldehyde limits the ability to generalize the results from these investigations. Levels of formaldehyde were generally below concentrations that typically cause acute respiratory irritation in most people. When the air conditioning systems were not used in hot weather, formaldehyde concentrations rose above levels that have been associated with symptoms of respiratory irritation in sensitive individuals. Formaldehyde and acetaldehyde were found at levels that exceed chronic exposure limits that have been calculated to be protective. However, the lack of clear and relevant public health guidance for residential exposures to formaldehyde prevents the Technical Team from adequately evaluating the health implications of the levels found in this study.

- Although not observed for all compounds detected, operating the air conditioning system was correlated with notable reductions in formaldehyde levels. However, because of the AC coil failures indicative of this problem, it should not be assumed that a home has an operating AC system.

- Indications of the presence of sulfur dioxide were found inside three Test homes and not inside either Control home with one air monitoring instrument. However, another instrument with a lower detection limit did not confirm these results. Great care should be taken not to over interpret these results, especially for health

- Sulfuric acid was not detected using real-time monitoring instruments. Time weighted sampling showed results inside and outside Test and Control homes at levels very near the method detection limit. Because exposure to low levels of sulfuric acid is a health concern and the possibility of its presence as part of a contaminated drywall reaction, the Technical Team recommends sampling for this compound in chamber testing.

- Compounds were detected above odor thresholds. These may result in temporary sensory irritation, discomfort, nuisance, and reduced quality of life for some individuals which resolve when the exposure ends.

- The additive irritant effects of contaminants found may cause mucous membrane irritation (eyes, nose and throat) or trigeminal nerve irritation, resulting in a reduced quality of life for some individuals. Upper airway irritation may also exacerbate pre-existing respiratory health conditions, most notably asthma.

- Characteristics (e.g., air exchange rate, construction) of Test and Control homes were similar, suggesting that these variables were not a major factor for drywall emissions or copper corrosion.

Primary Recommendations are as follows:

- People who feel ill, especially those with persistent symptoms, should see their doctors—regardless if they believe their symptoms are associated with drywall or other indoor air problems. They should tell their doctors about any concerns they might have about environmental exposures.

- Operate air conditioning systems and increase air exchange rates in a way that keeps temperature and humidity low to reduce indoor air contaminant levels.

- Test for sulfur dioxide, sulfuric acid and other acid vapors in chamber studies to determine if these compounds should be further investigated.

Secondary recommendations are as follows:

- Consider exploring the effects of chemical mixtures on occupant symptoms and copper corrosion. Recognizing the significant limitations in evaluating low level chemical mixtures, and the absence of standard or consensus methods of evaluating health effects from chemical mixtures, the Technical Team briefly examined the possible role of chemical mixtures found in Test and Control homes. Further examination of the data is necessary to ascertain if any of the compounds detected in the Test homes were a result of chemical reactions

between corrosive drywall emissions and other building materials, coatings, adhesives, or chemicals in the indoor environment.

- Re-evaluate and revise the FDOH Case Definition for homes meeting the Chinese drywall criteria as new data becomes available.

II. Background:

Drywall from China was imported into the United States to address the shortage of essential construction materials created following record-breaking 2004 and 2005 hurricane seasons and a national demand for new home construction. In 2008 homeowners began reporting upper respiratory irritation and copper corrosion in their recently built homes (2001-2007). In late February 2009, the Louisiana Department of Health and Hospitals (LADHH) became aware of similar concerns from homeowners in that state.

In January 2009, the Florida Department of Health (FDOH) initiated a preliminary investigation into the use of Chinese drywall in newly constructed homes.

Residents reported premature failures of central air conditioning system evaporator coils located indoors in the air handling unit and intermittent failure of appliances and/or electronic devices. Consumer Product Safety Commission (CSPC) staff inspections have noted corrosion of bare copper electrical wiring and the presence of sooty material on electrical wires (CPSC, 2009). Tarnishing and pitting of other metallic surfaces have also been observed in the affected homes in Florida and Louisiana by state and federal investigators.

Consumers in affected homes have reported various health-related symptoms including persistent coughs, bloody and runny noses, headaches, difficulty in breathing and irritated itchy eyes and skin. The most common symptoms reported among children (< 18 years of age) were respiratory infection, headache, dry cough, nosebleeds and eye irritation/redness. For both adults and children the most common “other” symptom reported was allergies/sinus/congestion. Many of these residents reported that the symptoms lessen or go away entirely when they leave their homes and return when they re-enter their homes (CPSC, 2009). In an informal survey of more than 400 callers to LADHH, the most common complaint reported was the presence of sulfur-like or other unusual odors.

Several federal agencies, the EPA, the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry (ATSDR), and CPSC, joined discussions with Florida, Louisiana, and Virginia state officials in early 2009 as the number of homeowner complaints began to increase. A collaborative effort among state and federal officials was formed to begin assessing the nature and scope of the problem.

According to the growing number of reports from federal and state agencies as well as

private consulting companies and laboratories, it was hypothesized that Chinese drywall emits reduced sulfur compounds, which are suspected to be the basis for the complaints.

Despite previous materials analysis data and test results received from private consultants on drywall, a number of data gaps prevented the FDOH from conducting an assessment of potential health hazards for occupants of affected homes. To begin to address these data gaps, the FDOH and EPA's Environmental Response Team (EPA/ERT) initiated an investigation to measure chemical concentrations present in the indoor and outdoor air of six test homes in Florida and Louisiana that met the FDOH case definition (Appendix A) and four control homes in those same states (3 in FL, 1 in LA). It was hoped that the results from this testing would provide the scientific basis for developing a standardized testing protocol for homes reported as adversely impacted by imported drywall (preliminary approaches are given in Appendices D and K) and would begin to provide a scientific basis for assessing the possible corrosive drywall-related health hazards for those living in these homes.

The FDOH and EPA/ERT investigation was not designed to determine the cause of metal corrosion or determine the source of the chemicals measured in the indoor air of these ten homes. However, the investigation was developed to help determine whether an association might exist between homes with imported drywall and the chemicals detected in the indoor air of affected homes. If data clearly demonstrated that outdoor sources were responsible for indoor concentrations of chemicals, this would also be reported.

The focus of the EPA/ERT and FDOH investigation[4] was limited to the following objectives:

1. Determine if building characteristics for affected homes differed from unaffected homes.
2. Measure the in-home concentrations of potentially corrosive gases, irritants and other volatile organic compounds.
3. Determine if the contaminants in the air of homes with Chinese drywall are different than homes with no apparent problems.
4. Evaluate the influence that chemicals in the outside air and environmental conditions had on the indoor air chemical concentrations.

III. Investigation Design and Methodologies:

As the FDOH began to investigate homeowner complaints of sulfur-type odors, corrosion of copper in homes and health-related concerns, they developed criteria for selecting homes to be included in this investigation (Appendix A). The FDOH "case definition" for homes that exhibit the key signs of corrosion associated with imported drywall was used as the initial screening for home selection in this investigation.

[4]An additional objective for the FDOH study was to evaluate the reliability and repeatability of available sample collection and analysis methods.

A. Home selection: In May 2009, preliminary site visits of 7 possible test homes in Florida and 5 in Louisiana were conducted to familiarize technical experts from EPA and ATSDR with the conditions present in homes experiencing premature copper corrosion believed to be associated with the presence of imported Chinese drywall. The test homes were selected by each state based on homeowner reports to them and from health department personnel visiting the homes to confirm that they met Florida's case definition (Appendix A). Homes selected for testing had extensive copper corrosion, severe odors, and a history of repeated AC coil failures. Control homes were selected based on the absence of signs indicating drywall associated corrosion, proximity to Test homes and comparability to Test home construction dates.

The following criteria were used to select homes for testing:

Test Homes:

1. Met FDOH Case Definition (Appendix A)
2. Had severe odor, copper corrosion, frequency of A/C coil replacement, and occupant symptoms
3. No cigarette or other tobacco smoking in the home prior to testing
4. Occupants agreed to vacate the premises for several days during testing
5. Investigators had access to the home around the clock during the testing period

Control Homes:

1. Met Test Home criteria 3,4 and 5
2. Located near one of the Test homes and constructed or renovated close to the time of the Test home construction
3. No apparent drywall-related problems

EPA/ERT staff, in consultation with FDOH, LADHH and EPA Headquarters, selected six homes in Louisiana and the west coast of Florida for monitoring /sampling. The EPA/ERT sampled two Test homes and one Control home in each state. Additionally, the FDOH conducted air sampling in four homes, two on the east coast (one Test and one Control), and two on the west coast of Florida (one Test and one Control) (see Table 1 below).

Table1. Summary Information on Test and Control Homes

Home Identifier #	Resident State	Tested by	Test or Control
80	Florida	FDOH	Test
81	Florida	FDOH	Control
90	Florida	FDOH	Test
91	Florida	FDOH	Control
100	Florida	EPA/ERT	Test
101	Florida	EPA/ERT	Control
102	Florida	EPA/ERT	Test
200	Louisiana	EPA/ERT	Test
201	Louisiana	EPA/ERT	Control
202	Louisiana	EPA/ERT	Test

B. Home Characterization and Air Change Rates:

All Test and Control homes were constructed or renovated in 2006-2007. The year each home was constructed was determined from interviews with homeowners and verified by examining local tax assessor records and/or by the date of the Certificate of Occupancy as described by builder. The construction style (i.e. construction techniques) was determined by walk-through inspection and interviews with either the homeowner or builder.

To evaluate how the air leakage rate of selected homes possibly influenced the resulting concentrations of chemicals in the indoor air, the air change rate (ACR) was measured in each home by the FDOH and LADHH. The test method was adapted from the *Manual for Ventilation Assessment in Mechanically Ventilated Commercial Buildings*, NISTIR 5329, National Institute of Standards and Technology, Jan 1994. For a complete description, see Appendix B.

C. Air Sampling Approach and Methods

Table 2 summarizes the approaches used by EPA/ERT and FDOH to sample the indoor and outdoor air in the Test and Control homes. The air was tested for a number of chemical compounds of interest, including sulfur-containing compounds, volatile organic compounds (VOCs), acids, and aldehydes (e.g. formaldehyde). EPA/ERT tested six homes in June-July, 2009. The FDOH tested four homes at two different times (#80 and #81, in May, 2009, and #90 and #91 in June, 2009). Detailed information about the test protocols and analytical methods is provided in Appendices B and C, for FDOH and EPA/ERT respectively.

Table 2. EPA/ERT and FDOH Air Sampling and Monitoring Approach

		EPA/ERT FL homes	EPA/ERT LA homes	FDOH FL homes
# test/control homes		2/1	2/1	2/2
# indoor sample locations per home		3-4	3-4	2
# outdoor sample locations per home		1	1	1
# Sampling days/home		2(48-hr)	2(48-hr)	1 (24-hr)
# Sampling events/home		4+	4+	80 and 81: 2 90 and 91: 12(reduced sulfur) 6 (VOCs)
Sampling time of day		2 day, 2 night	24 hours	
Real-time Air monitoring:	Hydrogen sulfide	continuous	continuous	every 2 hours
	Sulfur dioxide	continuous	continuous	N/A
	Sulfuric acid	continuous	continuous	N/A
	VOCs	continuous	continuous	N/A
	Particulate matter	N/A	continuous	N/A
Time-weighted Air Sampling:	Sulfur compounds	grab	grab	grab
	VOCs	8-hr/sample	8-hr/sample	4 hr/sample
	Aliphatic amines	8-hr/sample	8-hr/sample	N/A
	Aromatic amines	8-hr/sample	8-hr/sample	N/A
	Formaldehyde	8-hr/sample	8-hr/sample	N/A
	Inorganic acids	8-hr/sample	8-hr/sample	N/A
	Acetic, formic acid	N/A	8-hr/sample	N/A
	Pesticides/PCBs	N/A	48 hr/sample	N/A
	PAHs	10 hr/sample	10 hr/sample	N/A

+ Except for home 102 in FL and 202 in LA, 1 day and 1 night sampling event was conducted with the air conditioning system running at each home; the other day and night event was conducted with no HVAC system running. The HVAC system in FL home 102 was not functioning, so all 4 sampling events occurred with no air conditioning. The LA 202 home was also sampled with no air conditioning in order to compare to FL home 102. Particulate matter was only measured in home 202. Real-time air monitoring is a continuous instrument measurement for the duration of sampling; it is not analyzed by a laboratory. A grab sample is a one-time measurement, a snapshot in a given place and time. N/A – not measured. Time-weighted sampling refers to a sample collected over time and analyzed by a laboratory. Its results reflect the average concentration of the contaminant detected over the sampling period.

D. FDOH Air Sampling and Monitoring (Appendix B)

FDOH tested four homes, two on Florida's east coast and two on its west coast. In May 2009, FDOH tested homes #80 (Test) and #81 (Control)[5]. Two VOC and two reduced sulfur compound indoor and outdoor sampling events occurred over one 24 hour period at these homes, with 5 simultaneous samples collected during each sampling event for each test method. In June 2009, FDOH tested home #90 (Test home) and #91 (Control home). Six VOC and 12 reduced sulfur compound indoor and outdoor sampling events occurred over one 24 hour period at these homes. Grab samples for reduced sulfur compounds were collected every 2 hours. VOC samples were collected every 4 hours. For both sets of homes, continuous measurements of indoor and outdoor environmental parameters were made using direct reading instruments. Measurement of temperature, relative humidity, and carbon dioxide provides useful information on how environmental

[5] Phase I, homes 80 and 81, was a scoping investigation to generate data on the variability and reliability of available test methods to measure concentrations of sulfur-containing gasses and volatile organic compounds (VOCs). As a secondary goal, this phase of testing was anticipated to generate data on the types of chemical compounds found in affected and unaffected homes and their respective concentrations. Two sampling events were conducted to evaluate possible diurnal effects on indoor air concentrations. The investigation protocol for Phase II activities (Units 90 and 91) were evaluated and refined based on observations and experiences in Phase I.

conditions may impact indoor air concentrations of chemicals. Simultaneous measurement of indoor and outdoor conditions also makes it possible to evaluate the building's communication with the outside and its ability to control indoor humidity. Indoor and outdoor continuous real-time monitoring was collected for pressure differentials, CO, CO_2, temperature, and relative humidity. Outdoor air quality and weather conditions were continuously recorded.

Equipment, methodology specification and sensitivities, materials, supplies, software, and laboratories used to measure or sample the environment are described in the Appendix B.

E. EPA/ERT Air Sampling and Monitoring (Appendix C)

EPA/ERT performed a total of six air sampling events at each house (two events per day over the course of three days). Except for two of the homes where testing was done without operating air conditioning systems (homes 102 and 202), half of the air sampling events occurred with the air conditioning [AC] off and the other half with the AC on. Ambient (outdoor) air samples were collected concurrent with each indoor air testing event. Real-time continuous monitoring was performed at two locations in the home (living room and bedroom) and one outside of the home, for total volatile organic compounds (VOCs), hydrogen sulfide (H_2S), sulfur dioxide (SO_2), carbon monoxide (CO), carbon dioxide (CO_2), temperature and relative humidity. Air grab samples utilizing Tedlar bags (Zefon International) were collected from the living room, bedroom, a wall cavity, and outdoor air for reduced sulfur gases. SUMMA® canisters were utilized to collect grab samples in each home. Time weighted air sampling was conducted for VOCs, aliphatic and aromatic amines, formaldehyde, inorganic acids, and poly-cyclic aromatic hydrocarbons (PAHs). Real-time monitoring for particulate matter was added to the Louisiana (LA) sampling scheme (for Test home 202). Time-weighted air sampling for acetic and formic acids, and pesticides/polychlorinated biphenyl (PCBs) were also added for LA sites only. Details for the instruments and methods EPA/ERT used for real-time air monitoring and time-weighted air samplings are found in Appendix C.

F. Quality Assurance/Quality Control (Appendices B, D, E)

For detailed information regarding EPA/ERT QA/QC handling of sampling and data refer to the EPA/ERT Quality Assurance Project Plans (QAPP) located in Appendices D and E. EPA/ERT aldehyde samples results from LA homes (home 202) exhibited contaminant breakthrough. Therefore, these results should be treated as conservative estimated values and may underestimate the actual concentrations. Evaluation of FDOH data focused on addressing the three primary objectives set forth at the beginning of this report. All measurement results were subjected to a data evaluation process to ensure they accurately reflected the measurement that was collected. Data collected was verified for completeness and correctness, to the extent possible, by Salazar Consulting Group, a contractor for the FDOH. Quality assurance measures included confirming the data type, significant digits, units, and ranges using methods selected specifically for each data set.

For detailed information regarding FDOH QA/QC handling of sampling and data refer to Appendix B. Some reduced grab samples exceeded method holding times prior to analysis. Therefore, results may be underestimates of the actual concentrations.

G. Evaluation Process for Selecting Chemicals of Interest from the Data

The Technical Team used the following criteria to select chemicals found in the air sampling tests for further evaluation:

- Chemicals found to be emitted from suspected drywall in laboratory tests (some details provided in Appendix L).
- Chemicals only found in Test Home(s) at either
    - A mean concentration above the quantifiable limit, or
    - At a frequency ≥ 50%
- Chemicals found in both Test Homes and Control Homes, but at a higher mean concentration in at least one of the Test Homes (this only applies to measured concentrations above the quantifiable limit of the method).[6]
- Chemicals found in both Test Homes and Control Homes, at a frequency ≥ 50% in at least one of the Test Homes and at a greater frequency than in the Control Home.

Utilizing this process enabled the Technical Team to remove from consideration all but 112 airborne compounds identified in either or both of the Test homes tested by the FDOH and to 109 chemicals in homes tested by EPA/ERT. Appendix F displays the chemicals that met one or more of the criteria. The table includes chemicals from EPA/ERT and FDOH sampling results, which are not mutually exclusive. Indoor chemicals not included in the evaluation, which were at values below method reporting limits, are found in Appendix G. These additional compounds were reviewed to ensure there were no obvious trends or warranted health evaluation.

IV. Results:

A. Building Characteristics of Test versus Control Homes

The size of Test homes was more consistent than among Control homes. Test homes averaged 2,480 ft^2, ranging from 1,100 to 3,810 ft^2. Control homes averaged 2,510 ft^2, but ranged from 287 (a small guest house) to 5,704 ft^2. All Test homes were constructed in 2006, with the exception of #202, which was originally constructed approximately 30 years ago, but renovated in 2007. Control homes were constructed or renovated between 2006 and 2007. Test and Control homes in Florida had lower air change rates than homes in Louisiana, averaging 0.19 air change rate per hour (ACH) in Florida and 0.52 ACH in Louisiana homes.

[6]Appendix F data from EPA/ERT sampling are mean values which were significantly different between the Test home(s) and the Control home.

Table 3 below compares the air change rates between Test and Control homes evaluated by FDOH and EPA/ERT.

Table 3: Louisiana and Florida Home Characteristics

Air Change Rates (Test)		Air Change Rates (Controls)	
Average	0.27	Average	0.31
Median	0.25	Median	0.20
Minimum	0.12	Minimum	0.16
Maximum	0.47	Maximum	0.68

Using ASHRAE 62.2P guidance to estimate the minimum whole-house total ventilation for each home, Table 4 demonstrates the comparison of measured air change rate to the recommended minimum for each home.

Table 4: Calculated Minimum Air Change Rates (ACR) for Test and Control Homes

Home ID	Yr	ft^2	Measured ACR*	Recommended Minimum ACR*	Meas./Min. Ratio
80 (FL)	2006	3,240	0.22	0.20	1.1
81 (FL)	2007	287§	0.17	0.49	0.35
90 (FL)	2006	3,810	0.12	0.18	0.67
91 (FL)	2007	5,704	0.16	0.15	1.07
100(FL)	2006	2,460	0.28	0.21	1.33
101 (FL)	2006	1,735	0.24	0.31	0.77
102 (FL)	**2006**	**1,977**	**0.13**	**0.30**	**0.43**
200 (LA)	2006	2,300	0.47	0.24	1.96
201 (LA)	2007	2,313	0.68	0.27	2.52
202 (LA)	**2007**	**1,100**	**0.42**	**0.36**	**1.17**

*Reported in Air Changes per Hour (ACH)
§A small guest house
Bold = No AC system running

Table 5 below, orders the rank of ventilation ratios; the ratio of the measured air change rate to that of the recommended minimum air change rate, ranking them from highest to lowest. A ratio with a value greater than 1.0 means that home exceeds the recommended minimum ACR as per ASHRAE 62.2P. A ratio less than 1.0 means a home does not meet the minimum ACR as per ASHRAE 62.2P.

Table 5: Ranking of Air Change Rate Ventilation Ratios

Home ID	Ratio	Home Description
201	2.52	Control
200	1.96	Test
100	1.33	Test
202	**1.17**	**Test**
80	1.1	Test
91	1.07	Control
101	0.77	Control
90	0.67	Test
102	**0.43**	**Test**
81	0.35	Control

Bold = No AC system running

B. Summary of Results from FDOH Air Sampling and Testing (Appendix B)

Overall, FDOH air sampling results showed the following:

- Reduced sulfur gases were not detected in Test home 80 or Control homes 81 and 91. A single measurement of Hydrogen Sulfide in Unit 90 (Test Home) was quantified at 5.72 ppbv (8 µg/m^3). This was the only sample above the 5 ppbv (7 µg/m^3) method reporting limit out of the twelve samples collected in Unit 90. Similarly a single sample was reported to contain 4.14 ppbv (5.6 µg/m^3) of Carbonyl Sulfide (an estimate with some uncertainty because it was below the laboratory's method reporting limit/quantitation limit, see Appendix B).

- Assessment of diurnal trends was not possible due to the small number of positive detects for reduced sulfur compounds. Examination of VOC data did not reveal any trends in indoor air concentrations that would suggest diurnal variations. All homes effectively controlled temperature and relative humidity, suggesting that uncontrolled environmental conditions within Test homes were not contributing factors to drywall emissions or copper corrosion.

- Low levels of individual volatile organic compounds (VOCs) were detected in Test and Control homes. Outdoor ambient sources of certain VOCs were periodically observed to cause transient elevations indoors. However, the predominant source of most indoor VOCs was attributable to indoor sources.

C. Summary of Results from EPA/ERT Air Sampling and Testing (Appendix H)

Results of the EPA/ERT testing in homes (four Test, two Control) in Florida and Louisiana is summarized in Appendix H.

Overall, EPA/ERT air sampling analytical results demonstrated the following:

- There were no obvious differences in indoor air results between homes meeting the FL case definition versus those that did not.

- Reduced sulfur gases in homes 100, 101, 102, 200, 201, and 202, were below the limit of detection (BLD) with the exception of carbonyl sulfide (BLD-21.6 µg/m^3) and carbon disulfide (BLD-19.6 µg/m^3), also in outdoor air carbonyl sulfide (BLD-16.5 µg/m^3) and carbon disulfide (BLD-9.9 µg/m^3) which were detected during the second night sampling event in Test home 102.

- Real-time monitoring detected low levels (BLD to 8.0 µg/m^3) of hydrogen sulfide in homes 100, 101, 102, 200, 201 and 202. Hydrogen sulfide was also detected in the outdoor air (BLD to 25.8 µg/m^3) of all sampled homes. The maximum hydrogen sulfide level occurred concurrently with peak outdoor levels.

- Low levels of target volatile organic compounds were detected in all houses in FL and LA. The target organic compounds that were detected are typically found in indoor air.

- Several non target volatile organic compounds were detected in indoor air (e.g., pinene, nonanal)

- Low levels of acetic acid and formic acid were detected in both Test and Control homes in LA. Sampling for these compounds was not conducted in FL homes.

- Formaldehyde was detected in all homes at or above ~100 ppb (122.7 µg/m^3) under AC "OFF" conditions. In Test home 202 formaldehyde was measured at concentrations up to 400ppb (490.8 µg/m^3).

- The use of air conditioning systems appeared to result in lower levels of formaldehyde in homes 100, 101, 200, and 201.

D. Chemicals of Interest (Appendix F, G, J)

From all the chemicals detected during testing, a subset was selected using the criteria described in the Investigation Design and Methodologies section for a preliminary assessment of possible chemicals that might be associated with the corrosion and health complaints. This information can also be used to focus the scope of future drywall studies on selected chemicals.

For each chemical compound identified as a candidate "Chemical of Interest" (Appendix F tables), available health-based exposure guidelines (see Appendix I for expanded discussion) were compared with maximum and mean concentrations found in the

homes[7]. When available in the literature, the odor threshold of each chemical of interest was compared to concentrations found in the affected home and a determination was made about whether the chemical was a known irritating substance. Maximum and mean concentrations of these chemicals found during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics, odor threshold and common sources are listed in Appendix F. The table in Appendix F provides values with and without the air conditioning system running, which affected the levels of many of the chemicals detected. Classes of chemicals found in this table are sulfur-containing compounds, VOCs, acids, and aldehydes (including formaldehyde).

The following tables, 6 and 7, sum up the mean levels measured for some of the major chemical families. The summation is a basic screening tool to evaluate whether a trend exists between the Test and Control homes in total chemical compounds measured in the home. The total for terpenes is dominated by pinene levels, and for esters it is propanoic acid and its esters. Note, Tables 6 and 7 are preliminary. It is recommended to only draw comparisons for trends within the investigator's table itself (e.g., solely contrasting the EPA/ERT sampled homes).

Table 6: Sum Total of the means of Compounds of Interest in EPA/ERT Sampled Homes (ug/m^3)

Compound Class	**Sampled Home 100**	**101**	**102**	**200**	**201**	**202**
Total Aldehydes	227	213	389	203	143	434
Total Alcohols	106	19	18	67	BLD	43
Total Carboxylic Acids	BLD	0.4	8	BLD	BLD	BLD
Total Esters	18	58	241	201	67	149
Total Ketones	60	52	208	4	BLD	5
Total Hydrocarbons	24	9	39	169	9	15
Total Aromatic HC	5	6	9	57	16	15
Total PAHs	4	3	BLD	BLD	BLD	BLD
Total Terpenes/Terpenoids	60	27	636	1138	587	889
Total Other	68	2	5	3	2	3
Total Acid Compounds	1?	1?	1?	860	3069	3645
Total Sulfur Compounds*	BLD	BLD	BLD	BLD	BLD	BLD

Test Homes: 100,102,200,202
Control Homes: 101, 201
*Reduced sulfur compounds

[7]Appendix F data from EPA/ERT sampling are mean values which were significantly different between the Test home(s) and the Control home.

Table 7: Sum Total of Compounds of Interest in FDOH Sampled Homes (ug/m^3)

Compound Class	Sampled Home 80	81	90	91
Total Aldehydes	37	22	22	17
Total Alcohols	24	10	33	13
Total Carboxylic Acids	5	3	5	0.5
Total Esters	17	11	1	BLD
Total Ketones	17	10	9	2
Total Hydrocarbons	149	18	24	9
Total Aromatic HC	39	8	13	5
Total PAHs	3	1	4	2
Total Terpenes/Terpenoids	200	108	136	132
Total Other	3	1	4	BLD
Total Reduced Sulfur Compounds	4	3	5	2

Test Homes: 80, 90
Control Homes: 81, 91

E. Sulfur-containing Compounds

1. Hydrogen sulfide and other reduced sulfur compounds

H_2S Real-time air monitoring: Readers should interpret real-time monitoring results with a note of caution because concentrations near 2 ppb (2.8 µg/m^3) are very close to the lower detection limit of the instrument. EPA/ERT continuous real-time monitoring found hydrogen sulfide (H_2S) present at very low levels in the indoor and outdoor air of all EPA/ERT Test and Control homes. The maximum indoor and outdoor concentrations were 5.72 ppb[8] (8 µg/m^3, FL home 102) and 18.5 ppb (25.8 µg/m^3, FL home 102), respectively. The two highest outdoor levels were found on the FL control home (101) and Test home (102) properties. This neighborhood used reclaimed water for lawn irrigation. The distinctive odor of hydrogen sulfide was observed by sampling personnel as soon as the irrigation system was turned on.

H_2S was detected at each sampling location (including outdoor air), during each of the 4 test periods in Test home 102, for a total time of 32 hours during the 3-day monitoring period. In Louisiana, H_2S was detected in at least one sample location in each home (for a total of 3.25 hours in Test home 200, 18 hours in Test home 202, and 0.25 hours in Control home 201). It was also detected in each homes' outdoor sample location.

In general, levels inside and outside LA homes were lower than results in and around FL homes. No trend is apparent between maximum concentrations in Test homes versus Control homes. A slight trend is noted with mean values (the mean hydrogen sulfide

[8]This maximum concentration was measured in the wall cavity, not in the living space

concentration over the entire monitoring event). Three of the four Test homes had values slightly above the instrument's lower detection limit. Two of these homes also had mean hydrogen sulfide values near the detection limit. No Control homes had mean hydrogen sulfide concentrations above the detection limit. In general, when higher hydrogen sulfide levels were detected outdoors, the longer it was found indoors for both Test and Control homes. This suggests that the outdoor source may be contributing to hydrogen sulfide levels indoors.

Reduced sulfur compounds--grab sampling: The only reduced sulfur compound detected by EPA/ERT was carbon disulfide at Test home 102 at a concentration of 2.62 ppb (8.2 $\mu g/m^3$). It was found in 91% of the 16 indoor samples from this home when the air conditioning system was off. The maximum level detected, 2.64 ppb (8.2 $\mu g/m^3$) is lower than the specified method reporting limit of 5.00 ppb (15.6 $\mu g/m^3$). These results should be treated as estimated values. Reduced sulfur compounds were not found in outdoor samples. Reduced sulfur compounds were not detected in any of the Louisiana homes.

With few exceptions, FDOH collected samples were below the reporting limit of the method (15.6 $\mu g/m^3$). Only one FLDOH sample out of the twelve samples collected throughout the 24 hour testing period at Test home 90, measured above the reporting limit for H_2S at a concentration of 17.9 $\mu g/m^3$. In the early morning hours on June 9, 2009, H_2S was detected in two outdoor samples. A single sample contained carbonyl sulfide at a concentration of 10.2 $\mu g/m^3$, an estimate with some uncertainty because it was below the laboratory's method reporting limit/quantitation limit (see Appendix B).

2. Sulfur Dioxide

One real-time instrument found sulfur dioxide (SO_2) inside three Test homes and none of the Control homes. An instrument with a lower limit of detection (used in LA), did not confirm this finding. Other than recommending additional investigation, care should be used in drawing general conclusions.

3. Sulfuric acid

EPA/ERT conducted real-time monitoring for sulfuric acid inside and outside of LA homes. It was not detected above one instrument's lower detection limit of 26 ppb. Time-weighted air samples detected low levels up to 0.051 mg/m^3 in outside air of FL home 101, and up to 0.047 mg/m^3 in the outside air of LA homes 200 and 201. Sulfuric acid was detected up to 0.05 mg/m^3 in Control and Test homes (101, 102, 200, and 201). There was no significant difference in outdoor air and indoor air results. The majority of the time, sulfuric acid was not detected in the collected samples. The method detection limit is approximately 0.046 mg/m^3. Therefore, other than recommending additional investigation, care should be used in drawing general conclusions.

F. Other Acids

Formic and Acetic acids

Time-weighted samples detected levels of formic acid (up to 1.1 ppm) inside LA homes 200, 201 and 202, though most levels were non-detectable. Formic acid was detected

outside homes 201 and 202 up to 0.73 ppm. The maximum levels detected inside and outside the home are not significantly different and are close to the method detection limit of 0.55 ppm and therefore should be interpreted with caution. Formic acid was not sampled for in FL homes. Time-weighted samples detected low levels of acetic acid, up to 590 ppb (1450 $\mu g/m^3$) inside LA homes 200, 201 and 202. The method detection limit was 49 ppb (121 $\mu g/m^3$). There was no statistical difference between Test homes and Control homes suggesting that the source of acetic acid was not imported corrosive drywall. No acetic acid was detected outside the homes.

G. Aldehydes - Formaldehyde

All the homes tested by EPA/ERT were found to contain formaldehyde[9]. No statistical difference was found between formaldehyde levels measured in the Florida and Louisiana Test and Control homes. No correlation appears to exist between the air exchange rate and measured formaldehyde levels for each home. The highest value measured, with a mean concentration of 398 $\mu g/m^3$, occurred in Louisiana Test home 202 where "AC on" data was not collected.[10] The mean concentration for the remaining Test and Control homes was 131 $\mu g/m^3$ (with a range of 109-151 $\mu g/m^3$). Although the measurements taken with the air conditioning on demonstrate a significant decrease in detected levels and are in the range of what has been reported in published studies, these lower values remain above some of the minimal risk levels found in Appendix I (mean home levels ranged from 52-85 $\mu g/m^3$). Outdoor levels ranged from 2.0-6.5 $\mu g/m^3$.

V. Discussion:

To evaluate the FDOH and EPA sampling data, the federal/state Technical Team formulated the following questions:

- Are chemicals found in the indoor air of homes with signs of imported drywall that met the case definition different than similar homes that do not meet the Florida case definition and are believed to not have imported drywall?
- Were any of the chemicals found indoors attributable to chemicals present in the outdoor air, and therefore not from the imported drywall?
- Are there contaminants present at health relevant levels in the air inside the homes, regardless of their source?

In order to address the above questions, this evaluation includes:

- Examining of Quality Assurance/Quality Control of data
- Comparing building characteristics of Test versus Control homes
- Comparing the chemicals found in Test but not Control homes
- Comparing the chemicals found both in indoor and outdoor air

[9]The FDOH did not originally test for formaldehyde, however when early reports identified formaldehyde at levels above the odor threshold, measurements were taken in October 2009 on homes 80, 81, 90 and 91. Since different test methods were used and the data received late, a consensus decision was made to not include that data into this technical report.

[10]The air conditioning unit was functioning in LA home 202, however to maintain consistency in the sampling with the FL Test home 102, the air conditioning remained off.

- Examining differences in chemical concentrations with the air conditioner on or off
- Developing a Chemicals of Interest list that narrows the field of compounds for assessment as possible health hazards for occupants
- Comparing the chemicals found in the 10 homes with those described in published literature as being generally found in indoor air of homes
- Conducting a preliminary health evaluation for certain chemicals of interest

A. Building Characteristics of Test versus Control Homes

In this 10-home investigation, 60% of the homes exceeded the minimum ventilation rates recommended in ASHRAE 62.2P. Two of the four Control homes and four of the six Test homes exceeded their recommended minimum ventilation rates. No apparent trends were observed in homes that met or failed to meet minimum recommended ventilation rates. Therefore within the population of homes studies, the likelihood of experiencing corrosion associated with imported drywall did not appear to depend upon whether or not the homes provided adequate ventilation to control typical indoor air pollutant concentrations.

Care must be taken to not over interpret these findings. Homes were not chosen based upon their ventilation rates, but rather upon them exhibiting signs of premature copper corrosion associated with the use of imported drywall in recent construction. The measurement of air change rates was intended to ascertain if the homes were similar to other contemporary homes. What can be gained from these observations is that neither excessive nor restrictive air change rates were consistently found in either Test or Control homes. The homes selected for Test and Control homes were found to span the wide range of homes constructed using new materials and techniques.

B. Results of Chemical Sampling and Testing

What can be said about the chemicals found overall in the test versus control homes?

Of the chemicals that were sampled and tested for in this ten home investigation, twelve compounds were detected in homes sampled by both the EPA/ERT and FDOH, using two different sampling/analysis methods. Those 12 chemical compounds are 1-butanol, acetic acid, acetic acid (phenyl methyl ester), acetone, benzaldehyde, formic acid, 2-heptanone, hexanal, naphthalene, octanal, pentanal and propanoic acid. Propanoic acid and its other forms (e.g., esters, anhydride) are considered as one compound for this discussion. It is not unexpected to observe a low frequency of common chemicals among these 10 homes due to the low number of homes sampled. Variability of compounds within a respective home should be large based upon the construction materials used in that particular home and contributions from other items in the home including, but not limited to, the vast selection and diversity of cleaning agents, furnishings and personal care products. Many of the chemicals of interest listed in Appendix F are considered typical indoor air constituents and are associated with daily activities, home construction, and furnishing materials (EPA 1997, Colombo 1990, Alevantis 2003, Hodgson 2000).

Appendix J provides available information on typical indoor levels for compounds of interest.

What can be said about chemicals found indoors versus outdoors?

An influence from chemicals in the outside air and/or environmental conditions was demonstrated on some indoor air chemical concentrations. The peak hydrogen sulfide levels detected in homes only occurred when the lawn sprinkler systems were activated. The levels became non-detectable in outdoor air after the sprinklers were shut off for five minutes.

What can be said about the differences seen with AC on/off?

EPA/ERT conducted sampling with air conditioning (AC) off in all Test and Control homes and sampled with the AC on in Test Homes 100 and 200 as well as Control Homes 101 and 201.[11] For many of the compounds the maximum level listed occurred in the second Test home (102 and 202) and therefore "AC on" data was not available for comparison. Approximately 50% of the homes for which "AC on" data was available, had notable reductions in the measured concentrations, the most noteworthy were the chemical class aldehydes. Changes in chemical concentrations may have been the result of increased air change rates due to supply and return duct leakage, removal of chemicals by contact with the wet coils, reduction in temperature and humidity, or a combination of the these mechanisms.

C. Potential Health Impacts in Test Homes

Health Evaluation

From the list of the chemicals of interest found in Appendix F, the Technical Team evaluated the following chemicals or chemical classes to develop a preliminary health evaluation for residents. Additional details about the health guidelines used by the technical team for this assessment are in Appendix I.

- Reduced sulfur compounds, sulfur dioxide, inorganic gases – Generally concentrations of these chemicals found in the home sampling data were below levels set by EPA, ATSDR and others as health guidelines, with some exceptions. Some measurements SO_2 appeared higher than EPA ambient limits and the ATSDR MRL of 10ppb. However due to discrepancies from the methodologies and lower limits of detection used, further examination of SO_2 is necessary in order to ascertain its presence/absence. Some of the hydrogen sulfide measurements exceeded EPA's RfC of 1.4ppb. Many of these compounds were detected close to method and instrument levels of detection and therefore stated levels must be considered estimated values. No non-occupational health guideline is available for sulfuric acid.

[11] The HVAC fan was off when the AC was off.

- Acetic acid and formic acid – Acetic acid is an organic acid, with a distinctive pungent vinegar odor, and is used as a solvent, preservative and in the manufacture of rubber, plastics, acetate fibers, pharmaceuticals, and photographic chemicals. It is emitted from building materials such as plywood. Both EPA/ERT and FDOH testing revealed acetic acid in samples from Test and Control homes. The mean levels of acetic acid detected in the homes tested are almost 20-fold lower than regulatory health guidance values (see Appendix I), but above the published odor threshold. The levels of formic acid measured in the Louisiana homes fell 5-fold below regulatory exposure limits (OSHA and NIOSH); formic acid was not tested for in Florida homes by EPA/ERT. Formic acid levels in the LA homes fell below the published odor threshold. Caution needs to be used in applying the referenced occupational health guidelines since these guidelines typically utilize shorter total time exposures than what may occur in a residence, where time spent in the home can be 24 hours a day, 7 days a week.

- Aldehydes – including formaldehyde – Of all the chemicals identified in this investigation, the maximum concentrations of only three chemical compounds exceeded health-based guideline values described above. Two of these compounds, acetaldehyde and formaldehyde, are known irritants. The third compound, naphthalene, had an estimated maximum concentration and a mean concentration which just exceed the RfC guideline value. However, these are estimated concentrations due to the high method detection limit for naphthalene and therefore must be confirmed by additional studies.

  Formaldehyde can serve as the typical example for the aldehyde chemical class. A number of building products used in the home can be sources of formaldehyde (e.g. pressed wood products, paper products, personal care products and insulation, see CPSC preliminary chamber report 2009). A previous study of new homes found a mean formaldehyde level of 44.2 $\mu g/m^3$ in Eastern and Southeastern U.S. site-built homes (Hodgson 2000) and a mean of 94.9 $\mu g/m^3$ in new Florida homes (Hodgson 2002). The mean value for FL and LA Test homes was 206 $\mu g/m^3$ and for Control homes 113 $\mu g/m^3$ when the air conditioning system was not operating. When the air condition system was on, the mean level for Test homes was 69.5 $\mu g/m^3$ and for Control homes 61.9 $\mu g/m^3$.

  No statistical difference was found between formaldehyde levels measured in the Florida and Louisiana Test and Control homes. No correlation appears to exist between the air exchange rate and measured formaldehyde levels for each home. The highest value measured, with a mean concentration of 398 $\mu g/m^3$, occurred in the second Louisiana Test home where "AC on" data was not collected.[12] The mean concentration for the remaining Test and Control homes was 131 $\mu g/m^3$ (with a range of 109-151 $\mu g/m^3$). Although the measurements taken with the air conditioning on demonstrate a significant decrease in detected levels and are in

[12]The air conditioning unit was functioning in LA home 202, however to maintain consistency in the sampling with the 2nd FL test home, the air conditioning remained off.

the range of what has been reported in published studies, these lower values remain above some of the minimal risk levels found in Appendix I (mean home levels ranged from 52-85 μg/m^3). Outdoor levels ranged from 2.0-6.5 μg/m^3. The threshold for development of acute symptoms due to inhaled formaldehyde that is typically reported in the literature is 983 μg/m^3; however, sensitive individuals have reported symptoms at concentrations $\geq$ 123 μg/m^3 (HSDB). The indoor guideline values for formaldehyde, recommended with the intention of preventing acute sensory irritation, vary. In general, the reported estimated thresholds are in the range of 625–1250 μg/m^3 (Salonen 2009, Lang 2008). In order to prevent significant sensory irritation in the general population, the WHO has recommended a guideline value of 100 μg/m^3 as a 30-minute average (WHO 2001). The broad range of these guideline values results from including various safety factors and whether the health guideline value is addressing shorter or longer exposure (e.g., acute, intermediate or life-time). Although the levels for reported symptoms are generally at formaldehyde concentrations greater than 614 μg/m^3, it has been reported that long-term exposure to a formaldehyde concentration of 20 μg/m^3 may be associated with asthma-related and allergy-related health effects; concentrations above 60 μg/m^3 have been associated with exacerbation of existing asthma or development of asthma (Salonen 2009, NTP 2009, Tang 2009, WHO 2001). Tang 2009 reported that the likelihood of developing allergic asthma increases proportionately with indoor concentrations, especially at concentrations greater than 120 μg/m^3 (NTP 2009). The lack of clear and relevant public health guidance on residential formaldehyde exposure prevents the Technical Team from adequately evaluating the health implications of the levels found in this investigation. The broader issue of health risks due to formaldehyde exposure in homes is beyond the scope and capacity of this Technical Team and should be considered separately from issues surrounding corrosive drywall.

- Pinene and its isomers – Though pinene was detected in all EPA/ERT sampled homes, the maximum concentration measured for pinene falls just below its odor threshold.

Odors and Sensory Irritation

Upper airway irritation and skin irritation were common complaints from some occupants of affected homes. Many of the chemicals found in Test and Control homes are known respiratory irritants and/or malodorants (having an objectionable odor) when present above certain threshold levels. It is important to note that these compounds were not found at levels high enough to produce irritation normally. While the concentrations of individual chemicals found in the homes may fall below known levels for odor or irritation, it is not clear if there are additive effects that might alter individual sensitivities when occupants are exposed to a combination of chemicals.

Of the chemicals that were selected as chemicals of interest (Appendix F), information on odor characteristics was available for 56 compounds. Maximum concentration values measured during the EPA/ERT and FDOH sampling are also indicated. Odor threshold

values were also available for 82 of the compounds listed in Appendix F. Of these, fifteen chemical compounds exceeded their odor threshold. These chemical compounds are: acetic acid, butanoic acid, formaldehyde, formic acid, furfural, heptanol, hydrogen sulfide, nonanal, octanal, pentanal, 2-methyl propanal, 2-methyl propanoic (aka isobutyric acid), propanoic acid, 2-methyl-propanoic acid anhydride, thiophenes, and TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate).

The Technical Team found that Test homes had more sulfur-containing and other malodorants at or near their odor thresholds than Control homes. Levels of formaldehyde were found at concentrations above its odor thresholds, but generally below reported limits of respiratory irritation in Test and Control homes, although some homes did have levels above reported levels of respiratory irritation. Formaldehyde has been documented to cause symptoms of respiratory irritation above 100 ppb (123 $\mu g/m^3$), particularly in sensitive individuals. A confounder for the Technical Team when evaluating the possible health hazards present in affected homes was that similar levels of formaldehyde and acetaldehyde were also found in unaffected Control homes in this investigation.

Symptoms resulting from a toxic response to a chemical may be differentiated from temporary sensory irritation by the underlying mechanism causing the response. A toxic response often results in cellular, tissue, or organ damage that persists after exposure to the causative agent ends and requires healing for the person to return to normal. On the other hand temporary sensory irritation is often characterized by upper airway or eye symptoms caused by irritating nerve endings in the nose. Typically these symptoms resolve without treatment after exposure ends. Because the trigeminal nerve, the fifth cranial nerve with exposed nerve endings in the nose, can be aggravated by many different chemical and physical agents, it is possible that a combination of factors can result in symptoms of irritation.

The trigeminal nerve is responsible for sensing the irritation or pungency of a chemical (Shusterman 1992). The trigeminal nerve works together with the olfactory nerve to distinguish and characterize chemicals present in the air we breathe. This combination of sensory nerves forms the common chemical sense known as chemesthesis. The ability of certain chemicals to activate this early warning system depends on their potency, concentration, and duration of exposure. The potency of certain chemicals is based on their water solubility, composition, and functional groups. Many sulfur-containing compounds are potent sensory irritants, reflected by their relatively low odor thresholds. It has been observed that low level volatile organic compounds (VOCs) can be additive and produce sensory irritation at concentrations lower than individual threshold limits (Sullivan 2001). However which chemical combinations and the levels at which they can produce sensory irritation has not be determined.

Nasal exposure to sensory irritants at sufficient concentrations can promote symptoms that include a burning and painful sensation in the nasal passages, head, and cornea by stimulation of the trigeminal nerve endings. This stimulation of the trigeminal nerve can induce a neurogenic inflammatory response. The signs and symptoms of neurogenic inflammation include sneezing, nasal stuffiness, rhinorrhea, eye irritation, headache,

sinus congestion, cough, throat irritation, and wheezing. Vasodilation and increased vascular permeability in the nose can also result from prolonged irritation of the trigeminal nerve (Sullivan 2001). It has been shown that the presence of objectionable odors increases the sensitivity of trigeminal nerve endings (DeSesa 2008, Schiffman 2000).

The lack of findings that demonstrate indoor chemical concentrations likely to produce a toxic response suggests that alternative explanations of reported symptoms should be examined. Many of the symptoms described by occupants of affected homes coincide with those of trigeminal nerve sensory irritation. Far from conclusive evidence of a cause, this coincidence of symptoms may suggest a possible mechanism that might be further examined as more data becomes available.

D. Data Limitations

- The data evaluated for this report reflect only a 1 to 3 day sampling period at several locations inside and one location outside for a very limited number of homes. While the homes selected for testing were considered "severely affected" they may not represent the entire body of affected homes. The results should not be used to determine "worst case" exposures, the frequency of worst-case exposures, or representative or "typical" contaminant concentrations. Likewise, the contaminants and their concentrations found in the 10 homes are not necessarily reflective of what is present in other homes.

- Some reduced sulfur compound samples (this applies only to homes 80 and 81; all of the sulfur compound samples from homes 80 and 81 were below reporting and detection limits) were not analyzed within the required 24-hour period, and therefore, the reported values may be an under-estimation of the actual collected levels.

- Reduce sulfur compounds were detected in some FDOH blank samples; this was not considered a problem since the same compounds were not detected in any of the indoor or outdoor air samples.

- EPA/ERT formaldehyde and aldehyde sample results from LA homes (Test home 202) exhibited contaminant breakthrough[13]. Therefore, these results should be treated as conservative estimated values and may underestimate the actual concentrations.

- The inclusion criteria used for the list of compounds of interest could be viewed as either conservative or not conservative. A cut-off demarcation was used by the Technical team to include those compounds which had at least 50% detects in at least one Test home. The purpose of these inclusion criteria was to screen out

[13]For future sampling events an ozone scrubber in-line with the cartridge along with lowering sample volume may reduce collection column breakthrough.

chemicals that were not likely to be relevant in this assessment or were found at levels below reliable reporting limits. Contaminants not included in the evaluation were at values near or below method detection or reporting limits. However, they were reviewed to ensure they did not show obvious trends or warranted health evaluation.

- Many of the compounds in the list of chemicals of interest are tentatively identified compounds (TICs). Investigators identified these compounds by comparing spectra to established chemical libraries and not from internal references. TICs are the best estimate based on what these compounds may be and should be treated as such. If any of these TIC compounds are considered of health concern, the identification should be confirmed by additional testing and analysis with appropriate standards.

VI. Conclusions:

- Based on this limited sampling and analysis, air sampling results revealed no *obvious* differences between types and amounts of compounds found in indoor air in Test versus Control homes.

- The majority of chemical compounds detected are considered common constituents of U.S. homes. Indoor air monitoring in homes and chamber testing of emissions from building materials and furnishings (EPA 1997, Alevantis 2003, Hodgson 2000, Colombo 1990) have found similar levels of compounds such as toluene, benzene, acetone, acetic acid, ethylbenzene, xylene, alkanes (e.g. hexane, pentane), methylene chloride, naphthalene, limonene, tetrachloroethene, trichloroethane, octanal, propanal, pinene, pentanal, formaldehyde and acetaldehyde.

- The formaldehyde levels found in air conditioned homes were consistent with new construction (the primary sources of formaldehyde in homes are believed to be pressed wood products and laminates). Formaldehyde levels appeared to be reduced when air conditioning was operating in the homes. The maximum concentrations of acetaldehyde and formaldehyde were at levels that could exacerbate conditions such as asthma in sensitive populations (Salonen 2009, NTP 2009, Tang 2009, WHO 2001), especially in homes where air conditioning was not operating. The lack of clear and relevant public health guidance on residential formaldehyde exposure prevents the Technical Team from adequately evaluating the health implications of the levels found in this investigation. The broader issue of health risks due to formaldehyde exposure in homes is beyond the scope and capacity of this Technical Team and should be considered separately from issues surrounding corrosive drywall.

- The three reduced sulfur compounds of greatest interest, hydrogen sulfide, carbon disulfide and carbonyl sulfide were rarely detected in this limited sampling of 10 homes. The peak hydrogen sulfide level was detected outdoors when a lawn

sprinkler system was running outside a Florida home. The use of "reclaimed water" for sprinklers is associated with these hydrogen sulfide levels. The Technical Team recognizes this is a possible contribution to indoor air quality. However, the possible role that these compounds play in reported symptoms and corrosion to metal components in affected homes should not be discounted.

- Multiple compounds were detected above odor thresholds. Test homes had more sulfur-containing and other malodorants at or near their odor thresholds than Control homes. These may result in temporary sensory irritation of the nose, discomfort, nuisance, and reduced quality of life for some individuals.

- Sulfuric acid and sulfur dioxide were found at levels very close to the monitoring or sampling detection limits. Further testing will allow evaluation of possible health implications.

- With the exception of imported drywall in Test homes, construction styles, materials, and the ages of Test and Control homes were typical of modern homes and comparable with each other. Four Test homes exceeded the American Society of Heating, Refrigerating and Air-Conditioning Engineers' (ASHRAE) minimum air change rate while two were less; two Control homes exceeded the recommended amounts, and two were less. All homes effectively controlled temperature and relative humidity, suggesting that uncontrolled environmental conditions within Test homes were not a major factor to drywall emissions or copper corrosion.

Recommendations:

- People who feel ill, especially those with persistent symptoms, should see their doctors—regardless if they believe their symptoms are associated with drywall or other indoor air problems. They should tell their doctors about any concerns they might have about environmental exposures.

- Operate air conditioning systems and increase air exchange rates in a way that keeps temperature and humidity low to reduce indoor air contaminant levels.

- Test for sulfur dioxide, sulfuric acid and other acid gases in chamber studies to determine if these compounds should be further investigated.

- Consider exploring the effects of chemical mixtures. Recognizing the significant limitations in evaluating low level chemical mixtures, and the absence of standard or consensus methods of evaluating health effects from chemical mixtures, the Technical Evaluation Team briefly examined the possible role of chemical mixtures found in Test and Control homes. Further examination of the data is necessary to ascertain if any of the compounds detected in the Test homes were a result of chemical reactions between corrosive drywall emissions and other building materials, coatings, adhesives, or chemicals in the indoor environment.

- Re-evaluate and revise the FDOH Case Definition for homes meeting the Chinese drywall criteria as new data becomes available.

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Appendix A

Florida Department of Health Case Definition

During the development for the indoor air testing investigation, homes were selected for a preliminary site visit by FDOH staff in late January 2009. In total twelve (12) homes in six (6) south Florida counties were visited to observe the reported effects of copper corrosion and to collect a limited number of bulk material samples believed to represent the conditions found in affected homes.

One outcome of these initial efforts was the development of a "case definition" for homes experiencing premature copper corrosion, possibly associated with the presence of imported drywall from China. The case definition served several purposes, the most important of which was to define the sentinel indicators of homes experiencing the same or similar problems. Using a series of five (5) observations, a homeowner or technical inspector could determine if the home met the case definition. To aid the public, a list of these observations was described using words and images on the FDOH website. For homes constructed after January 1, 2004 two or more positive responses met the case definition. Homes constructed prior to January 1, 2004 required three or more positive responses to meet the case definition. A summary of the case definition is given below.

1) Does the home contain sulfur-like or other unusual odors? Rule out sulfur-like odors emanating from seldom-used hot water heaters, well water, or sewer lines.
2) Repeated failures of A/C evaporator coils. Freon leaking from black corrosion on copper coil components is the most distinctive feature of this item.
3) Exposed copper lines and pipes exhibit a black or charcoal corrosion. Other chrome plated or silver surfaces in the home may exhibit excessive corrosion, pitting or tarnishing.
4) Observed printed labels on the back side of drywall in the home indicating it was manufactured in China. This typically requires cutting holes in finished walls and it may be difficult to find printed labels.
5) Using a professional inspector to confirm the presence of black corrosion on electrical wiring or on A/C coils.

Appendix B

Results of Indoor Air Testing in Two Homes Experiencing Copper Corrosion Associated with Corrosive Imported Drywall

Performed for the Florida Department of Health (DOH)

By

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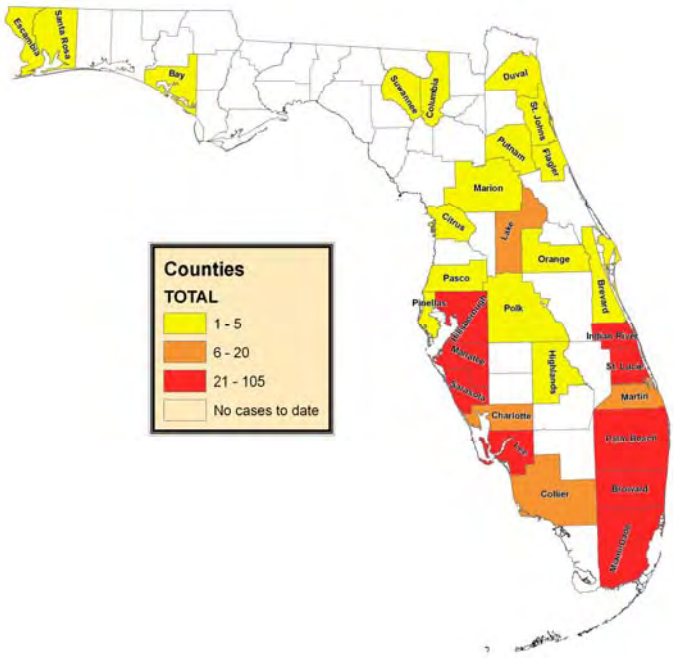
October 15, 2009



FLORIDA DEPARTMENT OF HEALTH

DIVISION OF Environmental Health

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1.0 EXECUTIVE SUMMARY

Reports of rapid, recurring copper corrosion in relatively new homes, associated with the use of imported drywall, prompted concerns of potential health hazards by occupants and public health officials. In order to assess possible health hazards in homes the Florida Department of Health measured chemical concentrations present in the indoor air of two homes meeting the case definition. The main purpose of this study was to evaluate potential occupant exposures to chemicals present in affected homes, compared to unaffected homes. Samples were taken throughout the daily cycle from different areas of the homes to evaluate daily and spatial variability. Simultaneous outdoor air measurements were taken in order to evaluate the influence of outdoor chemical sources on indoor air concentrations. Neighboring Control homes that were not exhibiting signs of copper corrosion and did not meet the case definition were also tested, enabling investigators to evaluate the possible influence of building characteristics and common pollutant sources on chemical concentrations in both Control and Test homes. Sampling and analysis methods capable of detecting a wide range of compounds at very low levels (parts per billion volume – ppbv) were selected. A study was designed to evaluate the reliability of available test methods; identify differences in building construction and ventilation rates; measure in-home concentrations of gasses possibly emitted from corrosive drywall; measure the indoor air concentrations of other volatile organic compounds (VOC) present in the home; and to evaluate changes in gas concentrations associated with diurnal cycles.

The Test and Control homes selected for testing were constructed in 2006 and 2007 respectively. The air change rates for homes ranged from 0.12 to 0.22 air changes per hour. All homes effectively controlled temperature and relative humidity conditions, in part to very low leakage rates and tight building envelopes. An estimate of the reliability and repeatability of the ASTM D 5504 test method could not be accomplished due to the infrequency of detecting reduced sulfur gasses (Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide) in the Test homes. With few exceptions, simultaneously collected samples were below the detection limit of the method (5 ppbv). Variability in reported sample results which included estimates of the standard deviation and percent relative standard deviation was calculated for eighty nine (89) VOCs measured during Phase I testing. Only one measurement of Hydrogen Sulfide in one Test Home was quantified at 5.72 ppbv. This was the only sample above the 5 ppbv Method Reporting Limit (MRL) out of the twelve samples collected throughout the 24 hours. A single sample was reported to contain 4.14 ppbv of Carbonyl Sulfide, an estimate with some uncertainty because it was below the laboratory's MRL. All other samples for sulfur-containing gases were below detection limits in Test and Control Homes. In the early morning hours on June 9, 2009, Hydrogen Sulfide was detected in two outdoor samples. Due to the small number of data points above the detection limit, identifying a trend would be unfounded.

Further analysis and interpretation of indoor air concentrations as they relate to potential hazardous exposures will occur as part of a joint assessment by state and federal technical experts. Comprehensive lists of chemicals identified in all homes are available in Appendices C, D, E & F.

2.0 INTRODUCTION & BACKGROUND

Increasing reports of copper corrosion in recently built homes (2001-2007) associated with the use of imported drywall prompted a preliminary investigation by the Florida Department of Health. An ad hoc survey instrument was developed to document the complaint demographics and to enable DOH staff to identify possible trends in self reported complaints. Homes were selected for a preliminary site visit in late January 2009 by Mr. Tim Wallace and Dr. David Krause. In total twelve (12) homes in six (6) south Florida counties were visited to observe the reported effects of copper corrosion and to collect a limited number of bulk material samples believed to represent the conditions found in affected homes.

Some of the (bulk) materials collected during the preliminary site visits were sent to Unified Engineering Inc, a private consulting firm, and to the US EPA Environmental Response Team (ERT) for content and headspace emissions analysis. Results from these early tests were compared to reported findings from private consultants provided to the Florida DOH by builders, drywall manufacturers, and homeowners. In addition to documenting the types of health complaints reported by people living in affected homes, DOH continued to gather additional information regarding the number and locations of affected homes in Florida and in other states.

One outcome of these initial efforts was the development of a "case definition" for homes experiencing premature copper corrosion, possibly associated with the presence of imported drywall from China. The case definition served several purposes, the most important of which was to define the sentinel indicators of homes experiencing the same or similar problems. Using a series of five (5) observations, a homeowner or technical inspector could determine if the home met the case definition. To aid the public, a list of these observations was described using words and images on the Florida DOH website. For homes constructed after January 1, 2004 two or more positive responses met the case definition. Homes constructed prior to January 1, 2004 required three or more positive responses to meet the case definition. A summary of the case definition is given below.

1) Does the home contain sulfur-like or other unusual odors? Rule out sulfur-like odors emanating from seldom-used hot water heaters, well water, or sewer lines.
2) Repeated failures of A/C evaporator coils. Freon leaking from black corrosion on copper coil components is the most distinctive feature of this item.
3) Exposed copper lines and pipes exhibit a black or charcoal corrosion. Other chrome plated or silver surfaces in the home may exhibit excessive corrosion, pitting or tarnishing.
4) Observed printed labels on the back side of drywall in the home indicating it was manufactured in China. This typically requires cutting holes in finished walls and it may be difficult to find printed labels.
5) Using a professional inspector to confirm the presence of black corrosion on electrical wiring or on A/C coils.

Despite the extensive amount of materials analysis and test results received from private consultants; a number of data gaps prevented Florida DOH from conducting an assessment of potential health hazards for occupants of affected homes. These data gaps included:

- Understanding the reliability and repeatability of sample results using the available sample collection and analysis methods.
- Identifying the primary corrosive gasses emitted from imported drywall.
- Variations in air concentrations of emitted gasses due to diurnal cycles and changing environmental conditions.
- Concentrations of chemicals present in homes that met the case definition.
- Identifying possible secondary chemical by-products due to corrosive emissions from drywall reacting with other materials, coatings, adhesives, or chemicals in the indoor environment.

Reports received from private consultants concluded that certain brands of gypsum drywall imported from China emitted several sulfur containing compounds under laboratory conditions. Efforts to measure some of the reduced sulfur compounds (Hydrogen sulfide, Carbonyl Sulfide, and Carbon Disulfide) met with limited success in homes exhibiting signs of copper corrosion. Due to the reactivity of the sulfur compounds and limited number of laboratories with the necessary equipment to perform the analysis, collection of a large number of samples throughout the daily cycle was impractical. Some consultants reported that certain brands of Tedlar Sampling Bags were unsuitable for collecting samples due to a trace amount of sulfur-contamination in the bags that caused false positive results.

Because of the numerous uncertainties and our limited experience with the sampling method for sulfur containing compounds (ASTM Method 5504) it was necessary to perform some preliminary work before in-home testing could be initiated on a large scale. DOH worked with an in-state private laboratory to establish the necessary analytical equipment and test methods for sulfur compounds in ambient air. With a centrally located laboratory, samples could then be couriered by automobile for analysis within the 24 hour hold time prescribed in the test method.

Understanding the accuracy and precision of test methods used to measure sulfur containing compound and volatile organic compounds (VOCs) is critical to interpreting test results. Each step in the process of sample collection, handling, storage, shipping, and analysis can introduce some amount of error. Florida DOH worked with laboratories to ensure adequate internal quality control procedures were in place to monitor analysis accuracy, and conducted a limited study to evaluate if potential errors in the sampling process affected analysis precision.

Identifying potential test homes was the next major effort. Seven (7) factors were considered when choosing a potential test home from those that were volunteered.

1. Test homes had to meet the Case Definition.
2. Homes exhibiting some of the most severe odors, copper corrosion, frequency of A/C coil replacement, and occupant symptoms were chosen.
3. No cigarette or other tobacco smoking in the home prior to testing.
4. Occupants had to agree to vacate the premises for several days during testing.
5. A neighboring “Control” home that was constructed in the same time period, but without corrosive drywall (i.e. did not meet the Case Definition) had to be made available.

6. Occupants of the "Control" home had to agree to vacate the premises for several days during testing.
7. Access to the home by investigators around the clock to collect air samples and measure environmental parameters was needed.

The Florida Department of Health contracted Salazar Consulting Group (SCG) to perform much of the preparation and on-site testing of homes in Florida. Dr. Rene Salazar, CIH oversaw and performed much of the equipment and materials preparation, sample collection, documentation, and laboratory coordination. Staff from the Florida DOH, consisting of Mr. Clark Eldredge and Dr., David Krause, worked cooperatively with SCG staff to accomplish the testing performed in Units 90 & 91.

3.0 STUDY DESIGN & OBJECTIVES

This in-home air sampling study constitutes the first two phases of a three phase effort. The first two parts included a scoping study to evaluate measurement methods (Phase I) and an in-depth study of a few homes to examine the indoor air levels for a wide variety of chemicals (Phase II). The information gained from the first two phases can be used to refine testing protocols for the third phase of evaluation in a larger set of homes. The third phase of such an effort has been initiated by the US Consumer Product Safety Commission, and is currently underway.

A core set of evaluations were identified for in-home testing in Phase I and Phase II. These included:

1) Building characterization to include measuring air change rates (ACH).
2) Monitoring environmental parameters indoors and outdoors.
3) Measuring Sulfur-containing gasses.
4) Measuring Volatile Organic Compounds (VOCs).

Testing was performed in a manner to achieve the following objectives. These included:

- Determine if building characteristics for affected homes differed from unaffected homes. (Phases I & II)
- Evaluate the reliability and repeatability of available sample collection and analysis methods. (Phase I)
- Measure the in-home concentrations of corrosive gasses emitted from defective drywall. (Phases I & II)
- Estimate changes in concentrations of corrosive gasses and VOCs due to diurnal cycles. (Phases I & II)
- Evaluate the influence that chemicals in the outside air and environmental conditions had on the indoor air chemical concentrations.
- Evaluate the presence, and in-home concentrations, of secondary by-products that may be attributable to corrosive emissions from drywall reacting with other materials, coatings, adhesives, or chemicals in the indoor environment. (Phases I & II)

3.1 Study Design for Phase I (Units 80 & 81)

Phase I of the in-home air sampling study comprised of a single Test Home (Unit 80) and a pool side guest house (Unit 81) that served as a Control Home. The primary purpose of the Phase I testing was to evaluate the sample collection and analysis methods. Secondarily the results were evaluated for indicators of a diurnal cycle effect, and for the indoor air concentrations of specific sulfur containing gasses and other VOCs. This scoping study also enabled investigators to refine the study design by identifying other factors that should be considered.

3.2 Study Design for Phase II (Units 90 & 91)

Phase II of the in-home air sampling study was a collaborative effort between the Florida Department of Health and the US EPA-ERT. Florida DOH's Contractor SCG performed preliminary site assessments of five (5) homes. Three homes were Test homes that exhibited signs of copper corrosion associated with imported drywall. Two homes were identified as Control homes that did not appear to be experiencing corrosion typically found in affected homes. Prior to commencing in-home testing, SCG performed a site visit, confirming the presence or absence of corrosion; confirming the absence of cigarette smoking indicators; measuring the square footage and volume of each home; preparing a diagram of each home; and measuring the air change rate of the homes using a tracer gas (Carbon Dioxide) decay method. The protocol used for the preliminary site assessment and air change rate determination is provided in Appendix A.

The US EPA-ERT performed testing on homes identified as Unit 100 (Test), Unit 101 (Control), and Unit 102 (Test). The Florida DOH, along with its Contractor SCG, performed testing on homes identified as Unit 90 (Subject) and Unit 91 (Control). This report will only describe testing and discuss results from DOH efforts. Results of EPA-ERT efforts will be reported in a separate document.

3.3 Scope of Study & Limitations

The scope of this study was to evaluate chemical concentrations present in the indoor air of homes meeting the case definition. The main purpose of this study was to evaluate potential occupant exposures to chemicals present in affected homes, compared to unaffected homes. Sampling events were performed throughout the daily cycle and were located in different areas of the home to evaluate cyclical and spatial variability. Outdoor air measurements were taken in order to evaluate the influence of outdoor chemical sources on indoor air concentrations. Neighboring Control homes that were not exhibiting signs of copper corrosion and did not meet the case definition were also tested. This enabled investigators to evaluate the possible influence of different building characteristics and comparison of chemical concentrations in a Control versus a Test home. Sampling and analysis methods capable of detecting a wide range of compounds at very low levels (parts per billion volume – ppbv) were selected. Based upon the results of limited materials testing available to DOH at the time, special attention was placed on test methods capable of detecting sulfur-containing gasses. Due to its sensitivity and wide range of sulfur-containing chemicals it could detect, ASTM Method D 5504 was selected to measure sulfur-containing gasses. A significant limitation of this method was a short sample hold-time of 24 hours. Some samples collected during Phase I testing, before a Florida

laboratory was found to analyze samples, were shipped to a California laboratory. Therefore, some samples exceeded the recommended hold time. A reduced confidence in these results was noted.

Many research questions relevant to this issue were beyond the scope of this study. Some of the recognized research questions that were **not** within the scope of this study include but are not limited to…

1) Emission rate of corrosive or irritant chemicals from drywall.
2) Determination of how long the drywall emissions could potentially impact the indoor environment.
3) The potential for corrosive, irritant, or odorous gasses to become absorbed by neighboring materials within the home and be re-emitted.
4) Evaluation of remediation efforts that include source removal, filtration, increased ventilation, or treatment of emitters by reactive chemical or coating.
5) Biological uptake of chemicals by occupants.
6) Evaluation of electrical hazards possibly associated with the recognized corrosion on copper wiring in affected homes.
7) Evaluation of radiological hazards present within the homes.
8) Clinical evaluation of any occupant's or investigator's signs or symptoms possibly attributable to time spent in an affected home.

3.4 Data Evaluation

Evaluation of data was focused on addressing the primary objectives set forth at the beginning of this study. All measurement results were subjected to a data evaluation process to ensure they accurately reflected the measurement that was collected. Data collected by SCG and data reported by each analytical laboratory was verified for completeness and correctness, to the extent possible, by SCG. Quality assurance measures included confirming the data type, significant digits, units, and ranges using methods selected specifically for each data set. The following describes the various data verification processes applied to the generated data sets:

- Environmental parameter measurements (temperature, relative humidity, and carbon dioxide). were verified at the time of recording. Individual data points were confirmed to be generally reasonable and within expected ranges. Data used to generate graphs were verified by random selection of individual data points at a given time interval for matching to its graphical representation.

- Floor plan drawings, interior residence dimensions, and calculated room volumes were verified by cross-checking hand-generated drawings and recorded measurements with computerized versions. The accuracy of calculated room volumes was verified by duplicate calculations.

- Data used to calculate air change rates of homes were verified on-site at the time of collection and then again prior to their use in computations. Calculations were double-checked for reasonableness and accuracy prior to reporting.

- Volatile organic compound and Sulfur-containing gas air sample analytical data were evaluated using a multi-step process. Assigned sample identification information, sampling flow rates, and sample volumes, etc., were verified during collection, post-collection, and prior to submitting samples to the respective laboratories. Chain of custody forms and laboratory sample identifiers were reviewed and verified upon receipt of laboratory results. Analytical data generated and reported by individual laboratories were verified by the respective laboratory using in-house procedures prior to reporting. Descriptions of in-house lab procedures are provided with the summary reports prepared by the individual laboratory located in appendices of this report.

Phase I VOC sample results were evaluated for variability, and when appropriate, the standard deviation was calculated. Each sampling event consisted of five (5) simultaneous samples. When all five results were reported above the quantifiable limit of 0.8 $\mu g/m^3$, a standard deviation (SD), percent relative standard deviation (%RSD), and range were determined. These descriptive statistics can be used in further evaluation of sampling results.

3.5 Interpretation

The data generated by the DOH team will be evaluated together with data generated by the US EPA-ERT team to assess possible health hazards to occupants of affected homes. Within this report, interpretation of data collected during this study will be limited to addressing the objectives set forth at the beginning of this study. These were:

- Determine if building characteristics for affected homes differed from unaffected homes. (Phases I & II)
- Evaluate the reliability and repeatability of available sample collection and analysis methods. (Phase I)
- Measure the in-home concentrations of corrosive gasses emitted from defective drywall. (Phases I & II)
- Estimate changes in concentrations of corrosive gasses and VOCs due to diurnal cycles. (Phases I & II)
- Evaluate the influence that chemicals in the outside air and environmental conditions had on the indoor air chemical concentrations.
- Evaluate the presence, and in-home concentrations, of secondary by-products that may be attributable to corrosive emissions from drywall reacting with other materials, coatings, adhesives, or chemicals in the indoor environment. (Phases I & II)

4.0 AIR MONITORING AND SAMPLING BY FLORIDA DOH

4.1 Observations and Activities

Building characterizations

The year each home was constructed was determined from interviews with homeowners and verified by examining local tax assessor records. The construction style was determined by walkthrough inspection and interviews with either the homeowner or builder.

Unit 80 was constructed in 2006. This two-story home was approximately 3,240 square feet, with an attached garage. Construction style was slab on fill with stem-wall, concrete masonry unit perimeter walls and stucco/brick/stone veneer. This home was unique in that its attic was not vented and was insulated at the roof deck using a closed-cell expanding foam.

Unit 81 was constructed in 2007 as a pool-side guest house for Unit 80. This one-story structure was separate from Unit 80, and measured approximately 287 square feet. Construction style was slab on fill with stem-wall, concrete masonry unit perimeter walls and brick veneer. The attic was not accessed during the testing and so its insulation type was not ascertained.

Unit 90 was constructed in 2006. This two-story home was approximately 3,810 square feet, with an attached garage. Construction style was slab on fill with stem-wall, concrete masonry unit perimeter walls and stucco veneer. The attic was not accessed during the testing and so its insulation type was not ascertained.

Unit 91 was constructed in 2007. This two-story home was approximately 5,704 square feet, with two attached garages. Construction style was slab on fill with stem-wall, concrete masonry unit perimeter walls and stucco/brick/stone veneer. The attic was not accessed during the testing and so its insulation type was not ascertained.

Air Change Rates

Either before or after sampling for sulfur containing gasses and VOCs, an assessment of the leakage rate, or air change rate was made for each home. A tracer gas decay method was used to estimate the rate at which the air in the home is exchanged with the outdoors. By estimating the air change rate of these Test and Control homes they can be compared to other homes in Florida. Characterizing the air change rate of the homes also provides some insight as to the source strength necessary to cause measured concentrations of chemicals in the homes and their possible sources.

To determine the air change rate for each home the following protocol was used (adopted from the *Manual for Ventilation Assessment in Mechanically Ventilated Commercial Buildings*, NISTIR 5329, National Institute of Standards and Technology, Jan 1994). The complete protocol is provided in Appendix A.

a. Readings of carbon dioxide measurement devices were compared prior to use to ensure inter-device measurement variability of five percent (5.0%) or less; field calibrations of measurement devices were performed on-site immediately preceding data collection.

b. Carbon dioxide levels were measured within the living room (Location 1) and master bedroom (Location 2), if applicable, in each residence and at an outdoor location prior to test initiation.

c. Thermostats for all ventilation systems were set to 73 degrees Fahrenheit (^{o}F).

d. Fans of each ventilation system were set to the "ON" position prior to, during, and for thirty (30) minutes following carbon dioxide release; ventilation system fan settings were switched to the "AUTO" position immediately following the thirty (30) minute carbon dioxide release period.

e. Carbon dioxide was released at ventilation system return air registers for up to thirty (30) minutes, or until carbon dioxide concentrations at each of the indoor monitoring locations [living room (Location 1) and master bedroom)Location 2)] reached 2500 parts per million (ppm). Carbon dioxide gas introduction was stopped when the desired concentration was achieved at either of the indoor monitoring locations.

f. Carbon dioxide concentrations were measured in the living room (Location 1), master bedroom (Location 2), and outdoors (Location 3) at thirty (30) minutes after the carbon dioxide release was stopped. Measured levels were used to represent 'indoor air concentration at starting time; $C_i(t_1)$' and 'outdoor air concentration at starting time; $C_o(t_1)$', respectively.

g. Carbon dioxide concentrations were allowed to decay for approximately four (4) to five (5) hours, during which residence entry/exits were avoided or minimized.

h. Carbon dioxide concentrations were measured within the living room (Location 1), master bedroom (Location 2), and outdoors (Location 3) upon test termination. Measured levels were used to represent 'indoor air concentration at ending time; '$C_i(t_2)$' and 'outdoor air concentration at ending time; $C_o(t_2)$', respectively.

i. The Air Change Rate (ACR) for the living room (Location 1) and master bedroom (Location 2) of each residence were calculated by applying recorded concentrations to the following equation:

$$ACR = \frac{\ln[C_i(t_1) - C_o(t_1)] - \ln[C_i(t_2) - C_o(t_2)]}{t_2 - t_1}$$

$C_i(t_1)$	=	indoor air concentration at starting time (ppm)
$C_o(t_1)$	=	outdoor air concentration at starting time (ppm)
$C_i(t_2)$	=	indoor air concentration at ending time (ppm)
$C_o(t_2)$	=	outdoor air concentration at ending time (ppm)
$t_2 - t_1$	=	duration of monitoring (hours)
ACR	=	average air change rate (air changes per hour)

j. The arithmetic mean of ACRs (average ACR) for living room (Location 1) and master bedroom (Location 2) locations combined were calculated for each residence and identified as the "whole house" ACR and reported as Air Changes per Hour (ACH).

Table 1 shows the square footage, volumes, and air change rates for each of the homes evaluated by FDOH. Diagrams depicting the floor plans of each home are provided in Appendix B.

Table 1 – Area, Volume and Air Change Rates for Test and Control Homes

	sq ft	(m^2)	cu ft	(m^3)	Air Change Rate
Unit 80 (Test)	1st Floor 2,343	(218)	1st Floor 30,127	(853)	0.22 ACH
	2nd Floor 897	(83)	2nd Floor 8,271	(234)	
	Total 3,240	**(301)**	**Total 38,398**	**(1,087)**	
Unit 81 (Control)	1st Floor 287	(27)	1st Floor 2,547	(72)	0.17 ACH
	2nd Floor NA	.	2nd Floor NA	.	
	Total 287	**(27)**	**Total 2,547**	**(72)**	
Unit 90 (Test)	1st Floor 2,520	(234)	1st Floor 33,132	(938)	0.12 ACH
	2nd Floor 1,290	(120)	2nd Floor 12,555	(356)	
	Total 3,810	**(354)**	**Total 45,687**	**(1,294)**	
Unit 91 (Control)	1st Floor 3,281	(305)	1st Floor 44,118	(1,249)	0.16 ACH
	2nd Floor 2,423	(225)	2nd Floor 25,355	(718)	
	Total 5,704	**(530)**	**Total 69,473**	**(1,967)**	

Equipment & Materials

Equipment, materials, supplies, software, and laboratories used to measure or sample the environment are listed below.

A. Air Flow Calibration Equipment

i. Bios International Dry-Cal
Base: Model DC-1-B/SN 3307
Medium Flow Cell: Model DC-MC-1/SN S3362

B. Data Collection Equipment

i. Telaire Carbon Dioxide and Temperature Monitor
Model 7001
Serial Nos. 1039468/1039469/1059669/1059670/1062679/1073985

ii. Onset HOBO Datalogger
Model HOB-007-02
SN 487103/487104
Model U12-012
Serial No. 2318478/2322608/2322609/2322614
Boxcar Version 3.7 Software
HOBOware Lite Version 2.7

iii. Metrosonics AQ 5001Pro Air Quality Monitor (Serial No. 1710)
Temperature, Relative Humidity, Carbon Dioxide, and Carbon Monoxide

iv. Davis Weather Monitor II (Serial No. MCO1130A35) Weatherlink Software
Temperature, Dew Point Temperature, Relative Humidity, Wind Speed, Wind Direction, Rain Amounts, and Barometric Pressure.

v. Energy Conservatory Digital Pressure Gauge: Model DG-2 (Serial No. 9019)

vi. Jerome 631-X Hydrogen Sulfide Analyzer (Serial No. 631-2469 Rev H)

vii. Personal Air Sampling Pumps
Pumps received from Air Quality Sciences, Inc. (Marietta, Georgia) pre-calibrated at 0.2 liters per minute flow rate.

viii. Zefon International Tedlar Bags
1.0 Liter/Polypropylene Fittings (Model EG-PP-1)

ix. Carbopack B Sorbent Media
Air Quality Sciences, Inc.

C. Specialty Gases

i. Carbon Dioxide Gas
Air Liquide Product Code 0104105
Tri-Tech Product Code 1300900

ii. Compressed Nitrogen
Air Liquide Product Code 0104102
Tri-Tech Product Code 1300600

Gas Sources: Air Liquide America Specialty Gases, LLC for Location No. 1;
Tri-Tech Manufacturing for all other sites

D. Distance Measurement Meter: Leica DistoLite Laser Distance Meter (Model: D-E9/SN 731663 US)

E. Floor Plan Drawing Software: HGTV Home Design & Remodeling Suite (Product No. DJWT 20481)

F. Analytical Laboratories

i. Sulfur-Containing Compounds (ASTM D 5504)

a. Columbia Analytical Services, Inc.
2655 Park Center Drive
Suite A
Simi Valley, California 93065
Contact: Ms. Sue Anderson
Telephone: (805) 526-7161
Facsimile: (805) 526-7270
Website: www.caslab.com

b. Lakeland Laboratories, LLC
1910 Harden Boulevard

Suite 101
Lakeland, Florida 33803-1829
Contact: Mr. Mark Alessandroni
Telephone: (863) 686-2471
Facsimile: (863) 686-4389
Website: www.lakelandlabs.com

ii. Volatile Organic Compounds (VOCs)

a. Air Quality Sciences, Inc.
2211 Newmarket Parkway, #106
Marietta, Georgia 30067
Contact: Mr. Scott Steady
Telephone: (770) 933-0638
Facsimile: (770) 933-0641
Website: www.aqs.com

4.2 Air Monitoring Methodologies

Indoor Environmental Conditions

Continuous measurements of indoor and outdoor environmental parameters were made using direct reading instruments. Measurement of temperature, relative humidity, and carbon dioxide provides useful information on how environmental conditions may impact indoor air concentrations of chemicals. Simultaneous measurement of indoor and outdoor conditions also makes it possible to evaluate the building's communication with the outside and its ability to control indoor humidity. Environmental parameters, to include temperature, relative humidity, and carbon dioxide levels, were recorded every two (2) minutes within the living/family room and master bedroom of each residence throughout the twenty-four (24) hour sampling period using Telaire and Onset data logging equipment; data logging of the same environmental parameters were collected at the outdoor monitoring location of Unit 90.

Instantaneous measurements of pressure differentials were recorded within each the test and control residences, as compared to outdoors, throughout the twenty-four (24) hour sample collection period.

Outdoor Ambient Environmental Conditions

Outdoor environmental conditions were monitored using the Metrosonics AQ 5001Pro air quality monitor (Serial #1710). The monitor uses a resistance temperature detection sensor for temperature measurement with a range of +32° to + 140°F and an accuracy of +/- 0.9^{o}F with a resolution of 0.1^{o}F. The air quality monitor uses a capacitive sensor to measure relative humidity. The accuracy is +/- 3% at 25°C and the resolution is 0.1%. A non-dispersive infrared (NDIR) sensor is used to measure carbon dioxide concentrations. The range is 0 to 5,000 parts per million (ppm), accuracy is +/- 3% and resolution is 1 part per million (ppm). The CO_2 sensor was calibrated prior to use with

nitrogen for zero adjustment and 1,000 ppm carbon dioxide for span adjustment. Carbon monoxide (CO) was measured using an integrated electrochemical sensor calibrated with nitrogen and 35 ppm CO. See Attached Calibration Certificate. Quest Suite Professional Software was used to download, review, and analyze data collected by the AQ5001Pro.

General weather conditions were monitored using the Davis Weather Monitor II uses a solar panel (No. 7707) and a 9-volt backup battery as a power source. All components of the Weather Station were purchased in 2001 with factory calibration. The Anemometer (DS7911) was replaced in May 2009 and came with factory calibration. The weather station was tested in Tallahassee (May 22-29, 2009) prior to use and the results were comparable with simultaneous measurements from other weather stations reporting at the time.

Sensor Type
Wind speed – polycarbonate wind cups and magnetic switch
Wind direction – wind vane and potentiometer (UV-resistant)
Cable type – 4 conductor, 26 AWG

Table 2 – Davis Weather Monitor II Specifications

Parameters	Accuracy	Range	Update Interval
Temperature	± 1 ^{o}F	32-140 ^{o}F	2 Seconds
Wind chill	± 4 ^{o}F	-134-98 ^{o}F	2 Seconds
Wind speed	± 2 mph	2-175 mph	2.25 Seconds
Wind direction	± 7°	0-360°	2.25 Seconds
Rainfall	± 4%	0-99.99”	Every trip
Humidity	± 5%	10-90%	2 Seconds
Dew Point	± 4 ^{o}F	-99-140 ^{o}F	2 Seconds
Barometric Pressure	± 0.05” Hg	26-32” Hg	2 Seconds

Weatherlink Software was used to download, review, and analyze data collected by the Davis Weather Monitor II.

4.3 Air Sampling Methodologies

During Phase I (Applicable to Units 80 and 81 only):

a. Samples were collected at 9:00am and 3:00pm from the living rooms (Location 1) of each the test and control residences, and outdoors (Location 2).

b. Five (5) air samples were collected into Tedlar bags from the test home, the control home, and outdoors. The Zefon International Tedlar Bags used by SCG were not the type that has been described of having problems with pre-existing contamination. Samples were collected by insertion of individual Tedlar bags into individual sampling suitcases. Personal air sampling pumps were used to create a vacuum within the sampling suitcase, resulting in air flow and therefore sample collection directly into the sample bags while avoiding passage through the sampling pump (this method prevented cross-contamination possibilities).

Three (3) blank (unexposed) Tedlar bags were prepared by filling each with nitrogen.

c. Five (5) air samples were simultaneously collected onto Carbopack B sorbent media tubes from the living rooms (Location 1) of the test and control homes, and outdoors (Location 2); four (4) blank (unexposed) sample tubes were also prepared. Samples were collected with use of personal sampling pumps received pre-calibrated from Air Quality Sciences, Inc. at a flow rate of 0.2 lpm for 4 hours.

d. Tedlar bag air samples were shipped by overnight courier to Columbia Analytical Services, Inc. (Simi Valley, California); samples were analyzed for twenty (20) individual sulfur-containing compounds, to include hydrogen sulfide, carbon disulfide, and carbonyl sulfide, as per ASTM D 5504-01.

e. Carbopack B sorbent media tubes were shipped by overnight courier to Air Quality Sciences, Inc. (Marietta, Georgia); samples were comprehensively assayed for detection of VOCs.

f. Environmental parameters, to include temperature, relative humidity, and carbon dioxide levels were measured using data logging devices at each sample collection site within the test and control homes, and outdoors; data logging initiated upon arrival at the site and continued through completion of assessment activities.

g. Hydrogen sulfide levels were measured instantaneously within the test home to verify absence of available sources using the Jerome 631-X Hydrogen Sulfide Analyzer.

h. Differential pressures were measured periodically within the test and control homes using an Energy Conservatory Digital Pressure Gauge.

During Phase II (Applicable to Units 90 and 91 only):

a. Air samples were collected into Tedlar bags every two (2) hours over a twenty-four (24) hour period, alternating between the living room (Location 1) and master bedroom (Location 2) of each residence resulting in collection of six (6) samples from each location (living room) (master bedroom) of each residence. Samples were collected by insertion of individual Tedlar bags into individual sampling suitcases as described for samples collected during Phase I. Two [2] field blanks [Tedlar bags purged with only pure nitrogen] per residence were also prepared and submitted to the laboratory for analysis, as per ASTM D 5504-08.

b. Air samples were collected into Tedlar bags every two (2) hours over a twenty-four (24) hour period from an outdoor location (Location 3) at the Unit 90

residence; two (2) field blanks (Tedlar bags purged with only pure nitrogen) were also prepared and submitted to the laboratory for analysis).

c. VOC samples were collected continuously over a twenty-four (24) hour period from within the family/living room (Location 1) and master bedroom (Location 2) of each residence at a target flow rate of 0.2 liters per minute; sampling media at each sampling location were replaced every four (4) hours, and two (2) unexposed media tubes (per residence) were prepared and submitted to the analytical laboratory as field blanks.

d. VOC samples were collected continuously over a twenty-four (24) hour period from one (1) outdoor location (Location 3) at Unit 90. The target flow rate was 0.2 liters per minute and sampling media was replaced every four (4) hours, with one (1) unexposed media tube prepared and submitted as a field blank.

e. Tedlar bag samples were prepared for pick up by laboratory courier service as coordinated by Lakeland Laboratories, LLC (Lakeland, Florida). Samples were collected twice during the twenty-four (24)-hour sampling period to allow completion of analyses before expiration of the specified sample hold time.

f. Air samples for VOC analyses were collected over the twenty-four (24) hour sampling period using personal sampling pumps calibrated at approximately 0.2 liters per minute. Exposed sample tubes were kept refrigerated before and after sample collection and then shipped, in total, by overnight courier to Air Quality Sciences, Inc. (Atlanta, Georgia) for receipt the following morning.

Analytical-Laboratory Methods

i. Columbia Analytical Services, Inc.

Tedlar bag samples were analyzed by Columbia Analytical Services, Inc., for twenty (20) individual sulfur-containing compounds, to include hydrogen sulfide, carbon disulfide, and carbonyl sulfide, as per ASTM D 5504-01. Analyses were performed as soon as possible upon receipt by the laboratory to minimize holding time excursions. Samples were analyzed using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds, with the exception of carbonyl sulfide and hydrogen sulfide, were quantitated against an initial calibration curve for methyl mercaptan.

ii. Lakeland Laboratories, LLC

Tedlar bag samples were analyzed by Lakeland Laboratories, LLC, for twenty (20) individual sulfur-containing compounds, to include hydrogen sulfide, carbon disulfide, and carbonyl sulfide, as per ASTM D 5504-08. Each sample was obtained from the one (1) L Tedlar collection bag via a side arm of the valve through a one-fourth inch (¼”) outer diameter (OD) Teflon tube. Samples were subsequently introduced into an Agilent Model No. 7890 Gas Chromatograph (GC) equipped with

a volatiles interface inlet and two milliliter (2.0 ml) sample loop. The valve on the Tedlar bag was opened, and the exterior of the bag manually pressurized for approximately thirty (30) seconds to fill the sample loop with the air sample to be analyzed. The valve was then closed and the chromotograph run initiated. At the start of the run, a valve was actuated and the sample swept from the sample loop onto the analytical column (DB-1, 60-m, 0.32-mm ID, 0.5-μm film thickness). The GC was fitted with an Agilent Model No. 355 Dual-Plasma Sulfur Chemilluminesence Detector (SCD). The analytes of interest were separated by the column, entered the combustion chamber, and catalyzed into sulfur monoxide (SO). A vacuum pump pulled the combustion products into a reaction cell at low pressure, where excess ozone was added. The ozone reacted with the SO to form sulfur dioxide (SO_2), oxygen (O_2), and light. The light produced from the reaction was optically filtered and detected with a blue-light-sensitive photomultiplier tube. The signal was then amplified for display or output through a data system. Chromatographic peaks falling within the statistically-defined absolute retention time window for a given compound are assigned to the target analyte for the respective retention time. The response of the peak was compared to the calibration curve for that specific target analyte, the final concentration calculated, and the response factor reported.

iii. Air Quality Sciences, Inc.

Carbopack B sorbent media tubes were analyzed for comprehensive detection of individual VOCs by Air Quality Sciences, Inc. Sorbent tube collection, separation, and detection methodologies were adapted from techniques presented by the United States Environmental Protection Agency (USEPA) and others. Sorbent media received by the laboratory were thermally desorbed into a gas chromatograph with mass spectrometric detection (GC/MS), a technique which is generally applicable to organic chemicals with boiling points ranging from 35 degrees Centigrade (ºC) to 250ºC. Individual VOCs were quantified relative to a toluene standard and identified by comparison to a specialized indoor air mass spectral database created by AQS. Compounds not included in the internal database were identified with decreased certainty using a general mass spectral library available from the National Institute of Standards and Technology (NIST). The reliable quantification level for analyses were 0.8 microgram of analyte per cubic meter air ($\mu g/m^3$) based on the targeted collection volume of 48.0 liters. Values below 0.8 $\mu g/m^3$ are below the laboratory's quantifiable limit and were provided only for informational purposes.

4.4 Real-Time Air Monitoring Events

Hydrogen sulfide levels were measured approximately every 2 hours in the test and control homes. The Jerome® 631-X Hydrogen Sulfide Analyzer was used to take periodic direct readings of Hydrogen Sulfide concentrations in Units 90 & 91. The Jerome® 631-X reports an analysis range of 0.003-50 ppm. The Jerome® 631-X utilizes a patented gold film sensor. The instrument's selectivity to hydrogen sulfide reportedly eliminates interferences from sulfur dioxide, carbon dioxide, carbon monoxide, and water vapors. When the sample button is pressed, an internal pump draws air into the instrument. Any hydrogen sulfide in the sample is absorbed by the sensor which registers a proportional change in electrical resistance. The instrument's

resolution is reported to be 1 ppb, its accuracy is +/- 3 ppb at 50 ppb, and its precision is 5% Relative Standard Deviation. Results are provided in section 4.6.

4.5 Air Sampling Events

Phase I (Units 80 & 81) was a scoping study to generate data on the variability and reliability of available test methods to measure concentrations of sulfur-containing gasses and volatile organic compounds (VOCs). As a secondary goal, this phase of testing was anticipated to generate data on the types of chemical compounds found in affected and unaffected homes and their respective concentrations. Two sampling events were conducted to evaluate possible diurnal effects on indoor air concentrations. The study protocol for Phase II activities would be evaluated and refined based on observations and experiences in Phase I.

Five simultaneous samples for sulfur-containing gasses were collected from the Test home (Unit 80), the Control home (Unit 81), and Outside during two sampling events. The first sampling event began at 10:00 AM on May 4, 2009. The second event began at 3:45 PM on May 4, 2009. Samples were packaged and shipped via overnight courier (Fed Ex) to Columbia Analytical Services (Simi Valley, California) for analysis using ASTM Method D 5504-01. Because of shipping schedules and the rate at which the laboratory could analyze samples it was recognized that some of the samples would exceed the 24 hour hold time recommended in the analysis method. Samples were prioritized and the laboratory attempted to analyze samples using this priority. This limitation could not be avoided, but was remedied in Phase II by utilizing a laboratory located in Florida that could receive and analyze all samples within the 24 hour hold time prescribed in the ASTM D 5504-01 method.

Volatile Organic Compounds (VOCs) were collected during two sampling periods, a morning period of 4 hours and an afternoon period of 4 hours. Five simultaneous samples were collected from the Test home (Unit 80), the Control home (Unit 81), and Outside during each of the two sampling events. The first sampling event began at 9:00 AM on May 4, 2009. The second event began at 3:45 PM on May 4, 2009. Samples were packaged and shipped via overnight courier (Fed Ex) to Air Quality Sciences (Marietta, Georgia) for analysis using thermal desorption into a gas chromatograph with mass spectrometric detection (GC/MS).

Phase II (Units 90 & 91) examined the indoor air levels of sulfur-containing gasses and volatile organic compounds (VOCs) throughout a 24-hour cycle. Samples and measurements were taken in two locations within each home in addition to outdoors. Twelve (12) sampling events were performed to evaluate possible diurnal effects on indoor air concentrations of sulfur-containing gasses. Six (6) sampling events were performed to evaluate possible diurnal effects on indoor air concentrations of VOCs, consisting of two samples of 4 hour duration collected during each sampling event.

Air samples for sulfur-containing gasses were collected into Tedlar bags every two (2) hours over a twenty-four (24) hour period, alternating between the Living room (Location 1) and master bedroom (Location 2) of each home, resulting in the collection of six (6) samples from each location (living room & master bedroom) of each residence. The first sampling event began at 11:35 AM in Unit 90, and at 12:30 PM in Unit 91 on June 8, 2009 and continued for 24 hours.

Samples were packaged and taken by laboratory courier to Lakeland Laboratories, LLC (Lakeland, Florida) for analysis using ASTM Method D 5504-08.

Volatile Organic Compounds (VOCs) were continuously collected during six sampling periods in Units 90, 91, and Outdoors. Two simultaneous samples were collected from each home (Locations 1 & 2), and Outside throughout the 24-hour period. The first sampling event began at 11:35 AM in Unit 90, and at 12:20 PM in Unit 91 on June 8, 2009 and continued for 24 hours. After all samples were collected they were packaged and shipped via overnight courier (Fed Ex) to Air Quality Sciences (Marietta, Georgia) for analysis using thermal desorption into a gas chromatograph with mass spectrometric detection (GC/MS).

4.6 Real-Time Monitoring Results

Hydrogen Sulfide measurements taken with the Jerome 631-X did not detect concentrations above the device's detection limit of 3 ppb in either Unit 90 (Test Home) or 91 (Control Home). Data are presented in Tables 3 & 4.

Elevated Carbon Monoxide (CO) measurements were recorded outdoors (Unit 90; Location 3) from 7:25 PM on June 8 to 4:25 AM on June 9. The peak concentration of 19 ppm CO occurred at 9:18 PM, however the time weighted average during this 9 hour period was 3 ppm of Carbon Monoxide (CO). Carbon Dioxide (CO_2) measurements also spiked during an overlapping time period, beginning at 5:35 PM on June 8 and continuing until 7:35 AM on June 9. The peak concentration of 1,988 ppm CO_2 occurred at 6:55 PM on June 8, however the time weighted average during this 14 hour period was 841 ppm of Carbon Dioxide (CO_2). Because these measurements were recorded during and soon after a significant rain event, as indicated by relative humidity readings of >95% at ~70 ^{o}F, and rain measurements from the weather station of 0.75 inch in one hour, these high CO and CO_2 measurements in outdoor air may be a false reading. Excessive humidity is known as a possible cause of false readings by non-dispersive infrared (NDIR) and electrochemical sensors, as were used by the device that recorded these measurements.

Table 3 –Environmental Parameter Data- Instantaneous Measurements Unit 90 (06/08/2009-06/09/2009)

Time	AQS5001				Telaire					
	CO (ppm)	CO_2 (ppm)	RH %	TEMP Deg F	TEMP Deg F		CO_2 (ppm)		H_2S (ppb)	Press (Pa.)
	Loc 3 (Outdoors)				Loc 2 (MBR)	Loc 1 (LR)	Loc 2 (MBR)	Loc 1 (LR)		
3:45PM	0.0	454	60.5	86.2	74.9	73.5	749	630	<3	1.6
5:40PM	0.0	1035	96.7	69.5	74.2	73.7	629	622	<3	0.8
7:30PM	1.0	1242	90.8	72.3	75.1	72.5	624	560	<3	1.4
9:45PM	5.0	638	89.8	72.8	74.9	72.5	582	526	<3	-0.4
11:50PM	3.0	632	83.6	73.7	74.8	73.0	567	509	<3	-0.2
1:35AM	2.0	634	90.7	72.6	74.5	73.2	540	500	<3	-0.3
3:50AM	1.0	661	92.2	72.7	74.8	72.8	545	493	<3	-0.2
5:30AM	0.0	760	90.4	72.5	74.5	72.8	536	495	<3	0.00
7:35AM	1.0	690	87.4	75.5	74.3	74.9	538	499	<3	0.00
9:35AM	0.0	481	73.6	80.2	73.6	74.3	551	512	<3	-1.4
11:45AM	0.0	469	57.5	83.7	76.8	73.1	486	526	<3	-1.5

CO = Carbon Monoxide
CO_2 = Carbon Dioxide
RH = Relative Humidity
TEMP = Temperature in degrees Fahrenheit
H_2S = Hydrogen Sulfide
Press (Pa)= Differential pressure (Pascals) I/O
Loc 2 (MBR) = Master bedroom (1st Floor)
Loc 1 (LR) = Living room (2nd Floor)

Table 4 –Environmental Parameter Data- Instantaneous Measurements Unit 91 (06/08/2009-06/09/2009)

Time	Telaire					
	TEMP Deg F		CO_2 (ppm)		H_2S (ppb)	Press. (Pa)
	Loc 2	Loc 1	Loc 2	Loc 1		
2:40PM	73.5	75.0	710	754	<3	2.2
4:50PM	74.2	74.7	654	715	<3	0.9
6:50PM	73.8	74.3	670	670	<3	0.00
9:20PM	73.5	74.6	622	627	<3	-0.2
10:45PM	73.2	75.1	635	626	NM	NM
2:45AM	73.4	75.2	612	603	<3	-0.3
4:30AM	73.1	74.8	634	625	<3	0.0
6:30AM	73.1	74.6	629	666	<3	-0.003
8:37AM	74.6	75.3	625	662	<3	-1.0
10:45AM	74.3	76.3	622	674	<3	-1.2
1:20PM	74.2	75.9	610	614	NM	NM

TEMP=Temperature in degrees Fahrenheit
CO_2=Carbon Dioxide
H_2S=Hydrogen Sulfide
NM= Not Measured
Press (Pa)= Differential pressure (Pascals) I/O

4.7 Air Sampling Analysis Results

Sulfur-containing Gases

Results of sulfur-containing gas samples in Units 80 & 81 (Phase I) are summarized below with complete laboratory reports provided in Appendix C. With a single exception for Carbon Disulfide, no concentrations above the laboratory's detection limits were reported for Hydrogen Sulfide, Carbonyl Sulfide, or any of the other sulfur-containing compounds. Carbon Disulfide was detected at a concentration of 2.5 ppbv in one out of five samples taken in Unit 80 at 3:45 PM on May 4, 2009. Because only one sample detected the CS_2 a standard deviation could not be estimated for the result and confidence that this result reflects actual room concentrations is low. Outdoor air sample results did not indicate the presence of sulfur-containing gasses above detectable limits during either sampling event. One of the four blank samples was reported to have a concentration of 6.1 ppbv of Carbonyl Sulfide. The other three blanks were reported as non-detect for all analytes. One Tedlar bag (Sample 090504-RS-57) from the Unit 80 Test House, 2nd Sampling Event (3:45 PM) Location 1D arrived at the laboratory deflated and was not analyzed.

Samples collected during Phase I were submitted to Columbia Analytical Services (CAS) for analysis. Samples for Phase II were submitted to Lakeland Laboratories for analysis. Reporting limits for each laboratory are provided in Table 5.

Table 5 – Reporting Limits for Laboratories Analyzing Sulfur containing Gases

	CAS	Lakeland Lab	
Chemical Name	**MRL (ppbv)**	**PQL (ppbv)**	**MDL (ppbv)**
Hydrogen Sulfide	5.0	5.00	3.35
Carbonyl Sulfide	5.0	5.00	3.96
Methyl Mercaptan	5.0	5.00	4.65
Ethyl Mercaptan	5.0	5.00	4.59
Dimethyl Sulfide	5.0	5.00	3.41
Carbon Disulfide	2.5	5.00	1.29
Isopropyl Mercaptan	5.0	7.00	5.00
tert-Butyl Mercaptan	5.0	7.00	5.64
n-Propyl Mercaptan	5.0	5.00	4.36
Ethyl Methyl Sulfide	5.0	5.00	3.36
Thiophene	5.0	5.00	3.50
Isobutyl Mercaptan	5.0	5.00	4.00
n-Butyl Mercaptan	5.0	5.00	3.39
Diethyl Sulfide	5.0	5.00	4.29
3-Methyl Thiophene	5.0	5.00	2.70
Tetrahydrothiophene	5.0	5.00	2.07
Dimethyl Disulfide	2.5	5.00	3.25
2-Ethyl Thiophene	5.0	5.00	1.97
Diethyl Disulfide	2.5	5.00	1.26
2,5-Dimethyl Thiophene	5.0	5.00	3.62

CAS = Columbia Analytical Services
MRL = Method Reporting Limit (MRL & PQL are equivalent terms)
PQL = Practical Quantitation Limit MDL = Method Detection Limit

Results of sulfur-containing gas samples in Units 90 & 91 (Phase II) are summarized below with complete laboratory reports provided in Appendix D. All samples taken in Unit 91 (Control Home) were reported as non-detect for all sulfur-containing compounds. In Unit 90 one sample detected Hydrogen Sulfide at a concentration of 5.72 ppbv at 9:35 AM on June 9, 2009. Also in Unit 90 one samples detected Carbonyl Sulfide at a concentration of 4.14 ppbv at 9:45 pm on June 8, 2009 (note this value is below the quantitation limit reported by Lakeland Laboratories). All other samples for sulfur-containing gases were below detection limits in Unit 90 (Test Home). Outdoor air sample results detected Hydrogen Sulfide during two sampling events; 7.14 ppbv (4:00 AM on June 9); and 6.09 ppbv (7:35 AM on June 9). One of the four blank samples was reported to have a concentration of 160 ppbv of Carbonyl Sulfide and 4.9 ppbv of Isopropyl Mercaptan. The other three blanks were reported as non-detect for all analytes. One Tedlar bag (Sample 090608-RS-23) collected Outside during the 4th Sampling Event (5:40 PM) Location 3 arrived at the laboratory deflated and was not analyzed.

In order to gain some understanding about the reliability and repeatability of sample results obtained with available sample collection and analysis methods, samples were collected during Phase I so that a Standard Deviation (SD) and Percent Relative Standard Deviation (%RSD) could be calculated. Estimates of standard deviation could not be made for sulfur-containing compounds analyzed using the ASTM D 5504 method because most analytes were below the detectability of the method. Eighty nine of the volatile organic compounds measured in samples taken from Units 80, 81, and Outdoors met the criteria to estimate a Standard Deviation and Percent Relative Standard Deviation. They are provided in Table 6.

Table 6 – Standard Deviation, %RSD, and Range for VOC data from Phase I

CAS #	Chemical Name	STD DEV	%RSD	Min ($\mu g/m^3$)	Max ($\mu g/m^3$)
100-41-4	Benzene, ethyl	0.56	8.98	5.5	7
100-42-5	Styrene	0.29	4.93	5.5	6.3
100-52-7	Benzaldehyde	1.57	16.69	8.4	12.2
101-39-3	Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)	0.49	23.04	1.6	2.8
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)	0.49	20.85	2	3.2
10473-13-9	3-Buten-2-ol, 2,3-dimethyl-	0.21	12.49	1.5	2
104-76-7	1-Hexanol, 2-ethyl	0.67	5.67	11.1	12.5
106-42-3	Xylene (para and/or meta)	0.98	5.15	17.6	20.3
107-87-9	2-Pentanone	0.10	10.00	0.9	1.1
107-92-6	Butanoic acid	0.04	4.86	0.9	1
108-88-3	Toluene (Methylbenzene)	0.78	5.39	13.3	15.4
110-19-0	Acetic acid, 2-methylpropyl ester (Isobutyl acetate)	0.05	5.71	0.9	1
110-43-0	2-Heptanone	0.18	4.99	3.4	3.9
110-62-3	Pentanal	1.53	12.72	10.5	14.6
111-27-3	1-Hexanol (N-Hexyl alcohol)	0.58	14.84	3.3	4.7
111-70-6	1-Heptanol	0.64	12.26	4.7	6.2
111-71-7	Heptanal (Heptaldehyde)	0.52	6.64	7.3	8.6
111-84-2	Nonane	0.09	5.81	1.4	1.6
1120-21-4	Undecane	0.86	9.34	8.1	10.5
112-31-2	Decanal	1.16	43.82	1.3	4
112-41-4	1-Dodecene	0.48	14.98	2.8	4
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-	0.40	23.04	1.4	2.2
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)	0.34	15.71	1.8	2.5
124-13-0	Octanal	0.95	9.94	9.1	11.3
124-19-6	Nonyl aldehyde (Nonanal)	1.78	12.04	13.4	16.8
127-00-4	2-Propanol, 1-chloro	0.45	8.96	4.6	5.8
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)	2.17	18.79	9	13.7
13151-34-3	Decane, 3-methyl	0.59	7.63	7.2	8.7
13466-78-9	3-Carene	1.38	29.37	3.7	7.1
13475-82-6	Heptane, 2,2,4,6,6-pentamethyl	0.81	5.87	12.8	15
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)	0.95	10.53	7.9	10.2
140-67-0	Estragole (4-Allylanisole)	0.68	15.41	3.8	5.6
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl	0.15	17.63	0.7	1.1
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl	0.35	21.38	1.3	2.2
17302-32-8	Nonane, 3,7-dimethyl	1.52	8.51	16.1	19.6
17302-37-3	Decane, 2,2-dimethyl	0.29	5.38	5.2	5.9
17312-53-7	Decane, 3,6-dimethyl	2.06	18.07	10	14.9
1809-10-5	Pentane, 3-bromo-	0.31	23.71	0.9	1.7
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate	1.03	68.80	0.8	3.3
18794-77-9	Thiophene, 2-hexyl	1.23	49.42	1.2	3.7
2051-30-1	Octane, 2,6-dimethyl	1.00	42.69	0.6	3
2497-25-8	2-Decenal, (Z)-	0.21	17.88	1	1.5

CAS #	Chemical Name	STD DEV	%RSD	Min (μg/m³)	Max (μg/m³)
2548-87-0	2-Octenal, (E)	1.09	46.28	1.4	3.6
29066-34-0	Menthyl acetate	0.29	5.11	5.2	6
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)	1.56	41.96	1.1	5.3
464-48-2	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)	0.15	9.14	1.5	1.9
464-49-3	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1R)	0.30	24.20	0.9	1.6
470-40-6	Thujopsene	0.26	17.86	1.2	1.8
5131-66-8	2-Propanol, 1-butoxy	0.15	5.34	2.6	3
541-02-6	Cyclopentasiloxane, decamethyl	6.53	35.03	14.8	30.2
555-10-2	á-Phellandrene	0.56	9.60	5.3	6.6
556-67-2	Cyclotetrasiloxane, octamethyl	1.61	15.99	7.2	11
56539-66-3	3-Methoxy-3-methylbutanol	0.29	4.53	6	6.7
565-80-0	3-Pentanone, 2,4-dimethyl	0.76	8.72	7.5	9.4
589-34-4	Hexane, 3-methyl	4.94	82.68	1.7	14
591-76-4	Hexane, 2-methyl	2.95	62.07	2	9.6
591-78-6	2-Hexanone	0.37	20.19	1.2	2.1
617-94-7	Benzenemethanol, à,à-dimethyl-	0.34	17.85	1.5	2.3
62016-14-2	Octane, 2,5,6-trimethyl	0.61	4.00	14.8	16.3
62016-37-9	Octane, 2,4,6-trimethyl	8.98	51.59	1.5	22.7
62108-31-0	Heptane, 4-ethyl-2,2,6,6-tetramethyl	1.88	25.25	4.5	9.4
62183-55-5	Octane, 3-ethyl-2,7-dimethyl	1.04	10.27	8.7	11.5
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-	1.30	4.46	28	31
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)	0.18	4.17	4.1	4.6
64-19-7	Acetic acid	6.75	58.08	3.5	21.6
66-25-1	Hexanal	4.02	10.29	34.7	45.6
67-64-1	Acetone	0.09	4.86	1.7	1.9
693-54-9	2-Decanone	1.10	33.78	2.2	4.5
71-36-3	1-Butanol (N-Butyl alcohol)	0.30	21.43	1	1.7
71-41-0	1-Pentanol (N-Pentyl alcohol)	0.36	4.79	7.1	8.1
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	7.87	108.69	0.9	16
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro	0.13	11.77	0.9	1.2
78-79-5	1,3-Butadiene, 2-methyl	0.60	53.35	0.1	1.6
78-84-2	Propanal, 2-methyl (Isobutanal)	0.52	21.03	1.9	3.3
78-89-7	1-Propanol, 2-chloro-	0.23	20.19	0.8	1.3
79-31-2	Propanoic acid, 2-methyl	0.62	36.50	1.2	2.6
79-33-4	(S)-2-Hydroxypropanoic acid	3.01	94.69	0.8	7.3
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	8.51	23.83	25.2	42.1
821-95-4	1-Undecene	0.11	8.56	1.1	1.4
89-48-5	Menthyl acetate	0.29	5.11	5.2	6
91-20-3	Naphthalene	0.44	16.73	2.1	3.2
95-16-9	Benzothiazole	0.25	18.73	1.1	1.7
95-47-6	Xylene, ortho	0.40	5.23	7	8.1
95-93-2	Benzene, 1,2,4,5-tetramethyl	0.52	31.19	1	2.1
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)	0.11	7.21	1.4	1.7
98-01-1	Furfural (2-Furaldehyde)	0.19	9.46	1.9	2.4
98-56-6	Benzene, 1-chloro-4-(trifluoromethyl)-	0.67	4.67	13.2	15
98-83-9	à-Methylstyrene (iso-Propenylbenzene; (1-Methylethenyl)benzene)	0.15	13.30	0.9	1.3
98-86-2	Acetophenone (Ethanone, 1-phenyl)	0.40	10.95	3.3	4.3

Volatile Organic Compounds

Results of air samples for VOCs revealed the presence of hundreds of chemicals typically found in homes. Several sulfur-containing compounds were detected using the GC/MS method for VOCs, these included 2-hexyl Thiophene, 2-butyl Thiophene, and Benzothiazole, at concentrations below the detection limit of the ASTM D 5504 method that was used to detect sulfur-containing gasses. Outdoor air concentrations of VOCs were typically below the quantifiable limit of 0.8 $\mu g/m^3$ with the exception of 3-methyl Hexane, 2-methyl Hexane, and Acetone. One sampling event during Phase II identified elevated concentrations of Methyl methacrylate in Units 90 & 91 that was due to an elevated outdoor air concentration during the time period of 7:45 AM-12:45 PM on June 9, 2009. Aside from these unique compounds and events, significant contribution to indoor concentrations of VOC was not observed.

One metric often used to evaluate the relative strength of VOC sources in a building is Total VOC concentrations (TVOC). Average, maximum, and minimum TVOC measurements are listed in Table 7.

Table 7 – Summary of TVOC Measurements

	TVOC Average ($\mu g/m^3$)	**TVOC Max ($\mu g/m^3$)**	**TVOC Min ($\mu g/m^3$)**
Unit 80 (Test)	622	722	538
Unit 81 (Control)	296	324	254
Unit 90 (Test)	379	421	330
Unit 91 (Control)	510	559	466

A complete report of all VOCs detected and quantified is provided in Appendices E & F.

Environmental Conditions & Parameters

Detailed measurements of the environmental conditions within each home and outdoors during each sampling event are provided in Appendix G. In general the weather conditions were typical of early May and Early June in south Florida. Hot, humid, with occasional heavy thunder storms. The low air change rates of the homes in this study are reflected by their ability to effectively control indoor temperature and relative humidity. Pressure differential measurements confirmed the well-sealed and insulated construction of each Test and Control home. During one heavy downpour (0.75 inches in 1 hour) the relative humidity did not rise above 55% in Unit 90 or 44% in Unit 91, demonstrating the tight building envelopes of homes in this study.

5.0 CONCLUSIONS

Were building characteristics for affected homes different from unaffected homes?

Construction styles, materials, with the exception of imported drywall, and the ages of Test and Control homes were comparable. Air change rates for Test homes were 0.12 and 0.22 ACH, while for Control homes were 0.16 and 0.17 ACH. All homes effectively controlled temperature and relative humidity, suggesting that uncontrolled environmental conditions within Test homes were not contributing factors to drywall emissions or copper corrosion.

What is the reliability and repeatability of available sample collection and analysis methods?

An estimate of the reliability and repeatability of the ASTM D 5504 test method could not be accomplished due to the infrequency of detecting or measuring any of the reduced sulfur gasses (Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide) in the Test homes. With few exceptions, simultaneously collected samples were below the detection limit of the method. Some additional assessment of conditions or possible interferences that may cause false positive readings using this sampling and analysis method may explain the sporadic findings of Carbonyl Sulfide in blank samples.

An assessment of variability in reported sample results which included estimates of the standard deviation and percent relative standard deviation was accomplished for eighty nine (89) VOCs measured during Phase I testing. These measures of variability may be used when evaluating the samples collected from Units 90 & 91.

What were the in-home concentrations of corrosive gasses emitted from defective drywall?

A single measurement of Hydrogen Sulfide in Unit 90 (Test Home) was quantified as 5.72 ppbv. This was the only sample above the 5 ppbv Method Reporting Limit out of the twelve samples collected in Unit 90. Similarly a single sample was reported to contain 4.14 ppbv of Carbonyl Sulfide (an estimate with some uncertainty because it was below the laboratory's MRL/PQL). All other samples for sulfur-containing gases were below detection limits in Units 80 and 90 (Test Home).

Were there changes in concentrations of corrosive gasses and VOCs due to diurnal cycles?

Since corrosive sulfur-containing gasses were rarely detected in Test homes, an assessment of diurnal cycle impacts is somewhat limited. Trends or indications of periods when corrosive gas emissions were elevated were not identified. In two instances during the early morning hours at 04:00 AM and 07:35 AM on June 9, 2009, Hydrogen Sulfide was detected outdoors. Due to the small number of data points, declaring this a trend is premature.

Was there an influence from chemicals in the outside air and/or environmental conditions on the indoor air chemical concentrations?

In one case, an elevated level of Methyl methacrylate was detected inside Units 90 & 91 and simultaneously observed in the outdoor air sample. The origin of this ambient source was undetermined, but demonstrated the ability of VOCs to enter the homes from the outside over a 4 hour sampling period. Aside from this instance, the influence of outdoor weather conditions and contaminant sources were not apparent. The integrity of the building envelope and the efficiency

of the building to regulate temperature/humidity levels were assumed to sufficiently control indoor conditions.

What were the in-home concentrations of secondary by-products that may be linked to corrosive emissions from drywall reacting with other materials, coatings, adhesives, or chemicals in the indoor environment?

Further examination of the data is necessary to ascertain if any of the compounds detected in the Test homes were present due to chemical reactions between corrosive emissions from drywall and other materials, coatings, adhesives, or chemicals in the indoor environment. Comprehensive lists of chemicals identified in all homes are available in Appendices C, D, E & F.

Appendix A

Preliminary Site Assessment Protocol

Salazar Consulting Group, Inc.

A professional team of engineers, industrial hygienists, safety experts, physicians, and health scientists.

Indoor Environmental Quality Evaluations
Environmental and Medical Monitoring
EPA/OSHA Compliance
Expert Testimony

Hazardous Waste Control
Hazard Communication
Safety Evaluations
Training

June 4, 2009

David Krause, Ph.D., MSPH, CIH
State Toxicologist
Bureau of Environmental Public Health Medicine
Division of Environmental Health
Florida Department of Health
4052 Bald Cypress Way Bin A08
Tallahassee, Florida 32399-1712

RE: Air Change Rate Measurement Protocol
Chinese Wallboard Project
SCG File No.:1406.01

Dear Dr. Krause:

Please accept the following as the Air Change Rate Measurement Protocol to be implemented as part of the home pre-characterizations with regard to the Chinese Wallboard project:

Preparatory Tasks

1. All measurement protocol tasks are to be completed between the hours of 9:00am and 5:00pm.
2. Secure sufficient carbon dioxide gas (carbon dioxide gas used for soft drink carbonation will suffice) to achieve target concentration within select residence.
3. Select residence is to remain unoccupied by individuals except for those completing measurement tasks.
4. Request removal of all automobiles and lawnmowers from within attached garage(s) for a minimum of forty-eight (48) hours prior to measurement initiation.
5. Conduct a preliminary walk-through inspection to verify the following:
   a. Absence of indicators of tobacco smoking within the residence.
   b. Identification and removal (isolation) of all aromatic candles, plug-in fragrances, incense, deodorizers (automatic or passive), and aerosol dispensers.
   c. Identification and removal (isolation) of all sources of paint, gasoline, solvents, thinner, or other volatile organic compounds (VOCs).
   d. Closure of all windows and doors (to include garage door[s], if available); all windows and doors must remain closed during completion of monitoring tasks.

6607 Heatherton Court, Tampa, Florida 33617
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Specific Test Methods

1. Select carbon dioxide measurement device and, if multiple devices are utilized, ensure inter-device measurement variability of five percent (5.0%) or less; ensure field calibration of test device(s) within prior seven (7) days.
2. Measure carbon dioxide levels within each the living room and master bedroom areas of the residence and outdoors prior to test initiation (used only for information purposes and not air change rate calculation.)
3. Set each ventilation system thermostat to 73.0 degrees Fahrenheit (^{o}F).
4. Set each ventilation system fan to the "ON" position prior to, during, and for thirty (30) minutes following carbon dioxide release; the ventilation system fan setting is switched to the "AUTO" position immediately following the thirty (30) minute carbon dioxide release period.
5. Introduce carbon dioxide at the ventilation system return air register for up to thirty (30) minutes, or until carbon dioxide concentrations at the two (2) indoor monitoring locations (living room and master bedroom) reach 2500 parts per million (ppm); terminate carbon dioxide gas introduction when the desired concentration is achieved at either indoor monitoring location.
6. Measure carbon dioxide concentrations within each the living room and master bedrooms, and outdoors, thirty (30) minutes following termination of carbon dioxide termination; measured levels represent 'indoor air concentration at starting time; $C_i(t_1)$' and 'outdoor air concentration at starting time; $C_o(t_1)$', respectively.
7. Allow carbon dioxide concentrations to decay over a minimum of four (4) and maximum of five (5) hours, during which residence entry/exits should be avoided or at least minimized.
8. Measure carbon dioxide concentrations within each the living room and master bedrooms, and outdoors, a minimum of four (4) and maximum of five (5) hours following test initiation; measured levels represent 'indoor air concentration at ending time; $C_i(t_2)$' and 'outdoor air concentration at ending time; $C_o(t_2)$', respectively.
9. Calculate the Air Change Rate by inserting recorded concentrations into the equation which follows.

Air Change Rate Calculations

1. Use the following equation to calculate the average air change rate (ACR: air changes per hour):

$$ACR = \frac{\ln[C_i(t_1) - C_o(t_1)] - \ln[C_i(t_2) - C_o(t_2)]}{t_2 - t_1}$$

$C_i(t_1)$	=	indoor air concentration at starting time (ppm)
$C_o(t_1)$	=	outdoor air concentration at starting time (ppm)
$C_i(t_2)$	=	indoor air concentration at ending time (ppm)
$C_o(t_2)$	=	outdoor air concentration at ending time (ppm)
$t_2 - t_1$	=	duration of monitoring (hours)
ACR	=	average air change rate (air changes per hour)

2. Calculate ACR for the living room and master bedroom monitoring locations.
3. Calculate the arithmetic mean of the ACRs (average ACR) for the living room and master bedroom monitoring locations as representative of the "whole house" ACR.

Again, please allow the preceding methods to describe those to be implemented as part of the pre-characterization assessments. Additional details may become necessary during project progression and will be provided accordingly.

SCG appreciates the opportunity to be of assistance in this regard. Please do not hesitate to contact us should you have any questions, comments, or need additional information.

Sincerely,

SALAZAR CONSULTING GROUP, INC.

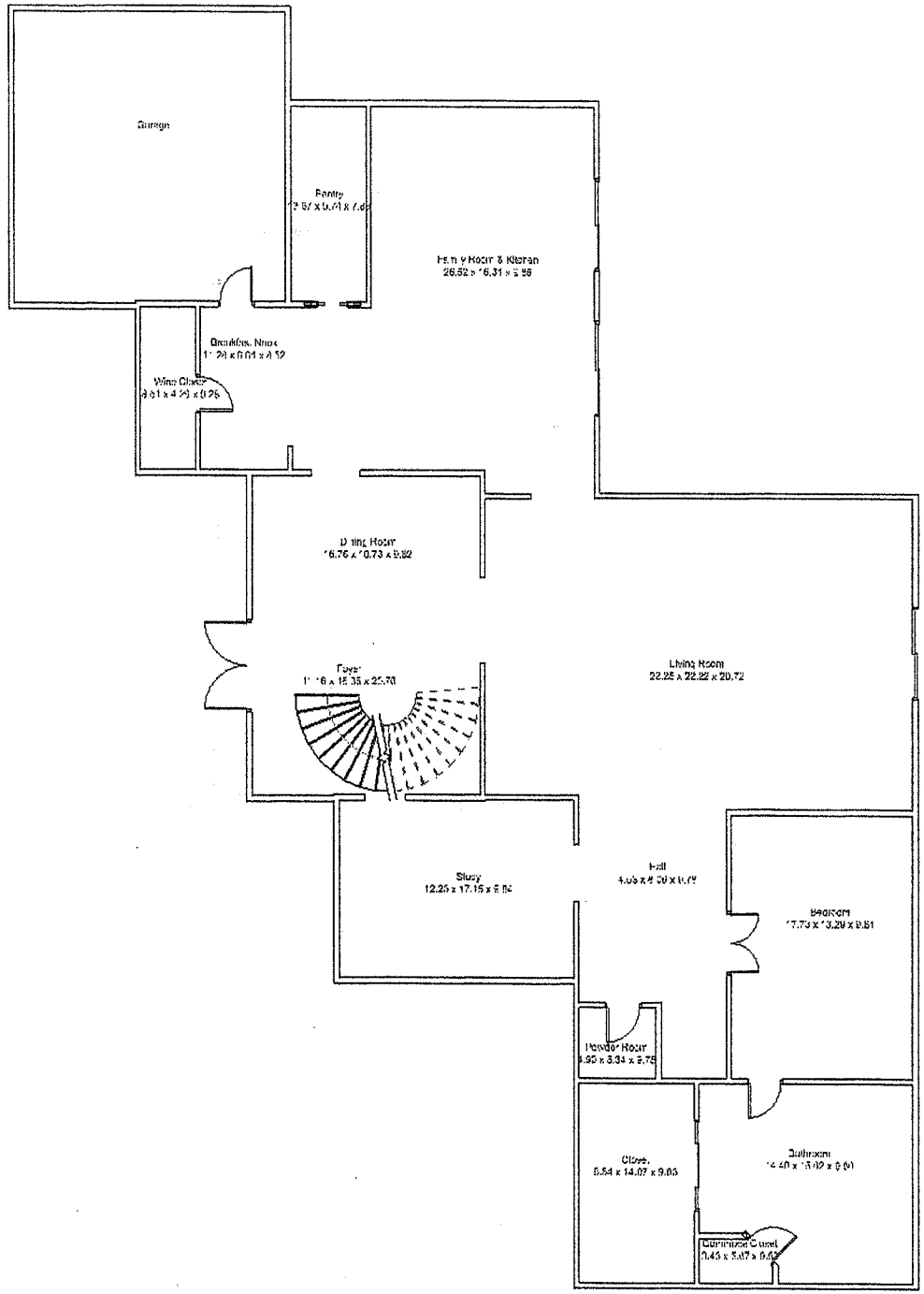
By: _____
Rene' R. Salazar, Ph.D.
Certified Industrial Hygienist

Appendix B

Floor Plan Diagrams of Homes

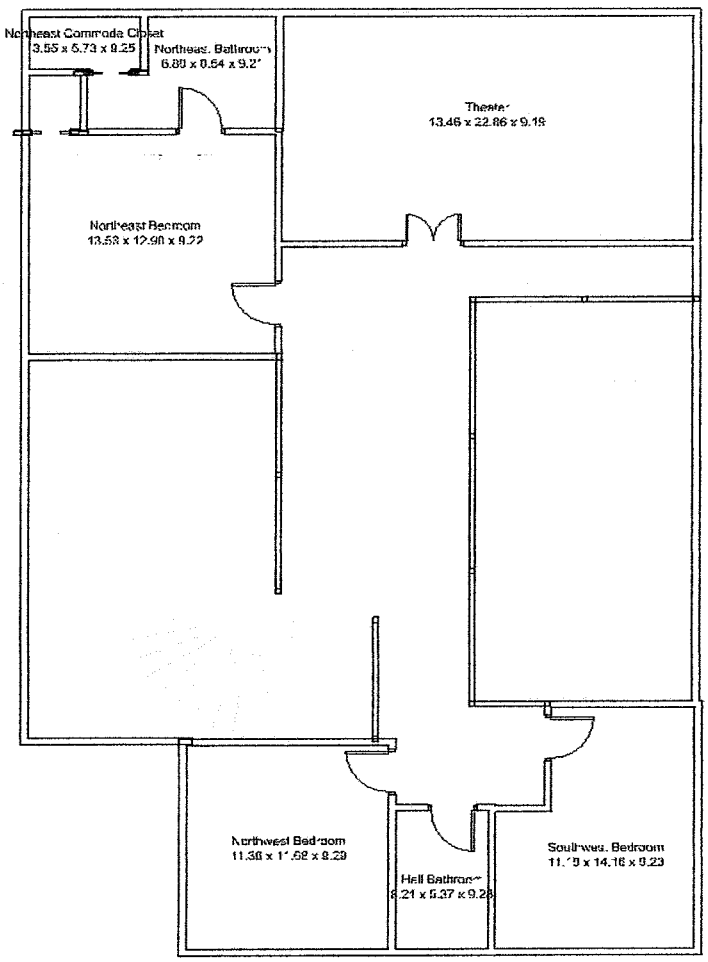
Unit 80

- Ground Floor

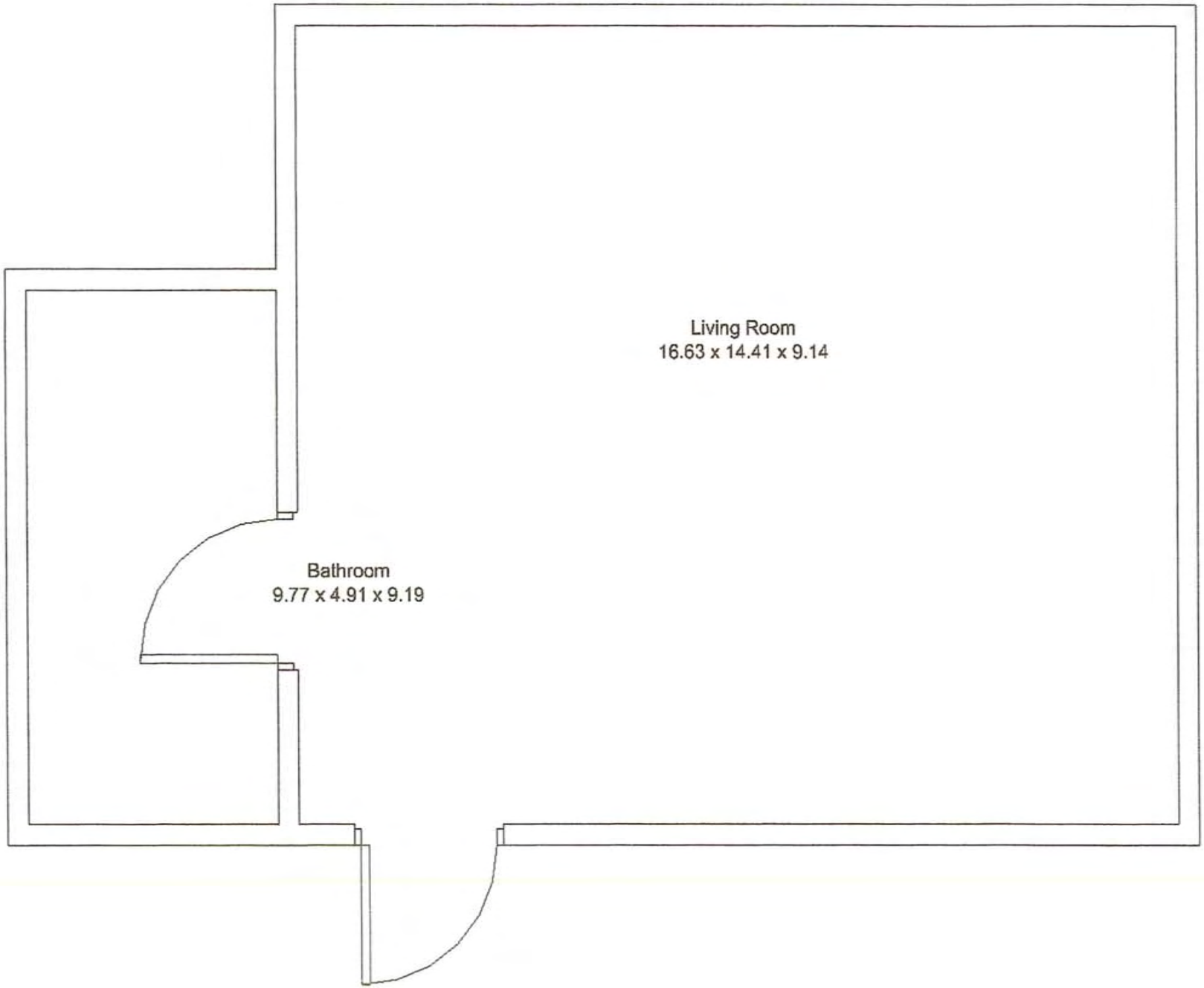


Unit 80

- Second Floor

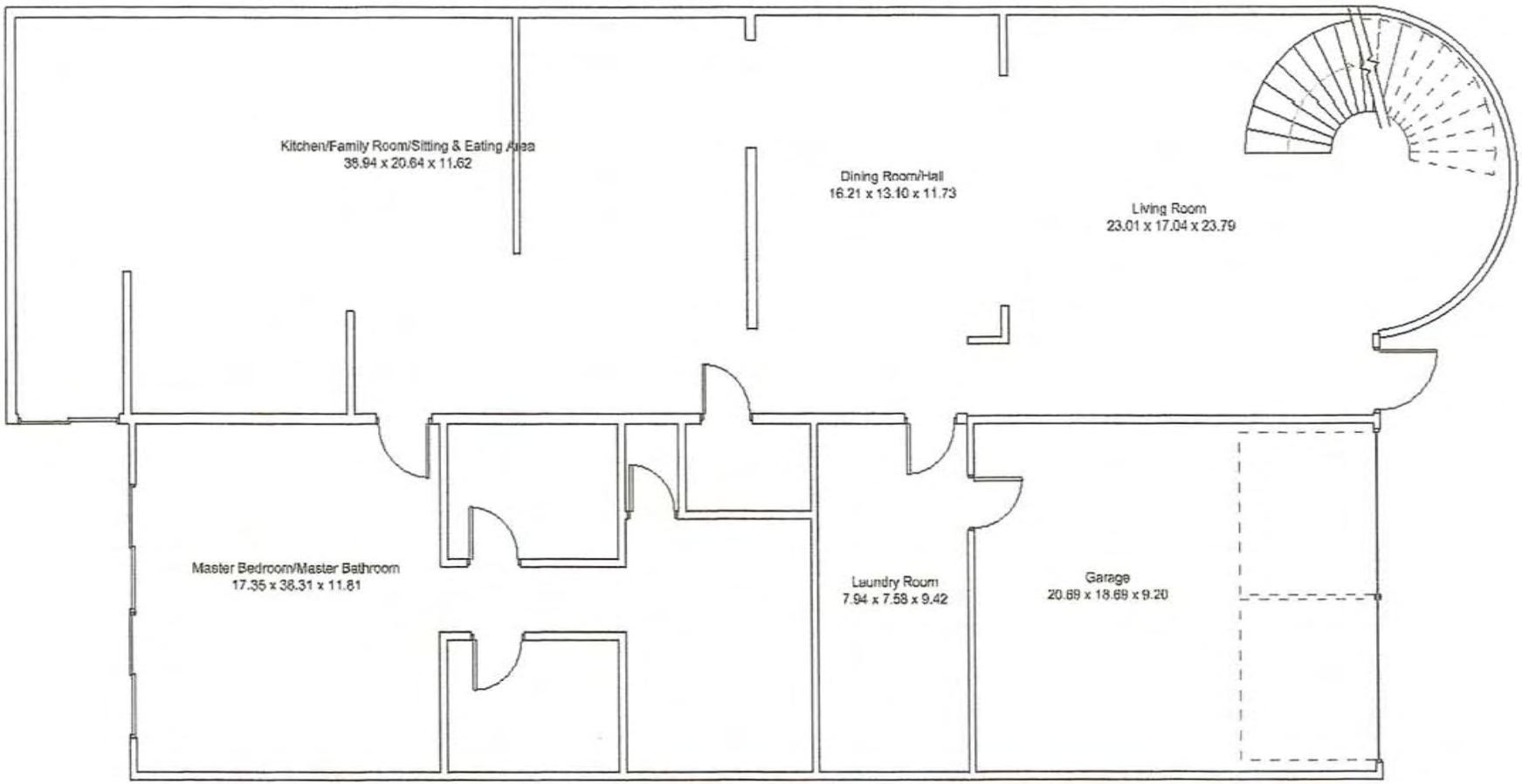


Unit 81



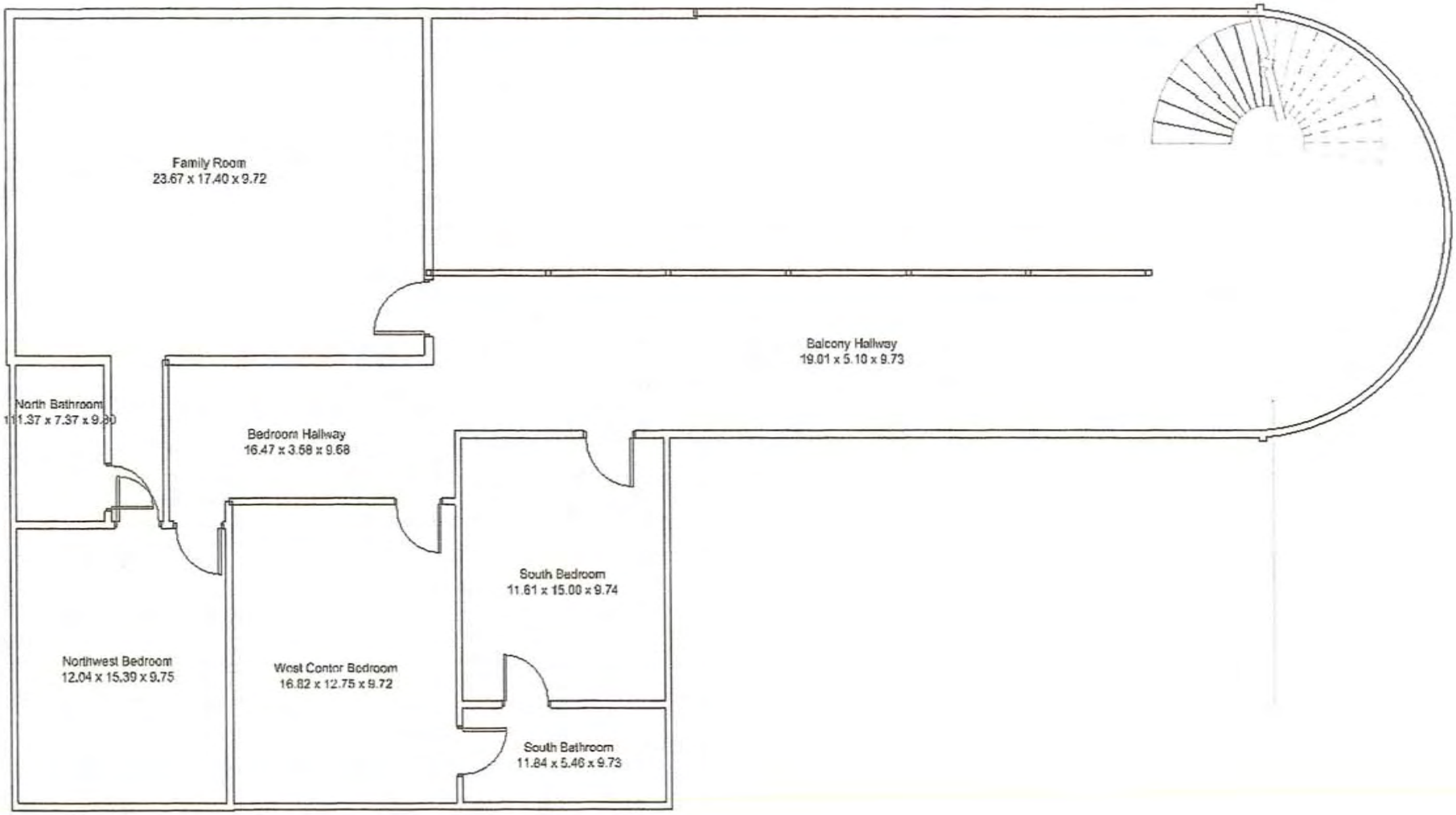
Unit 90

- Ground Floor



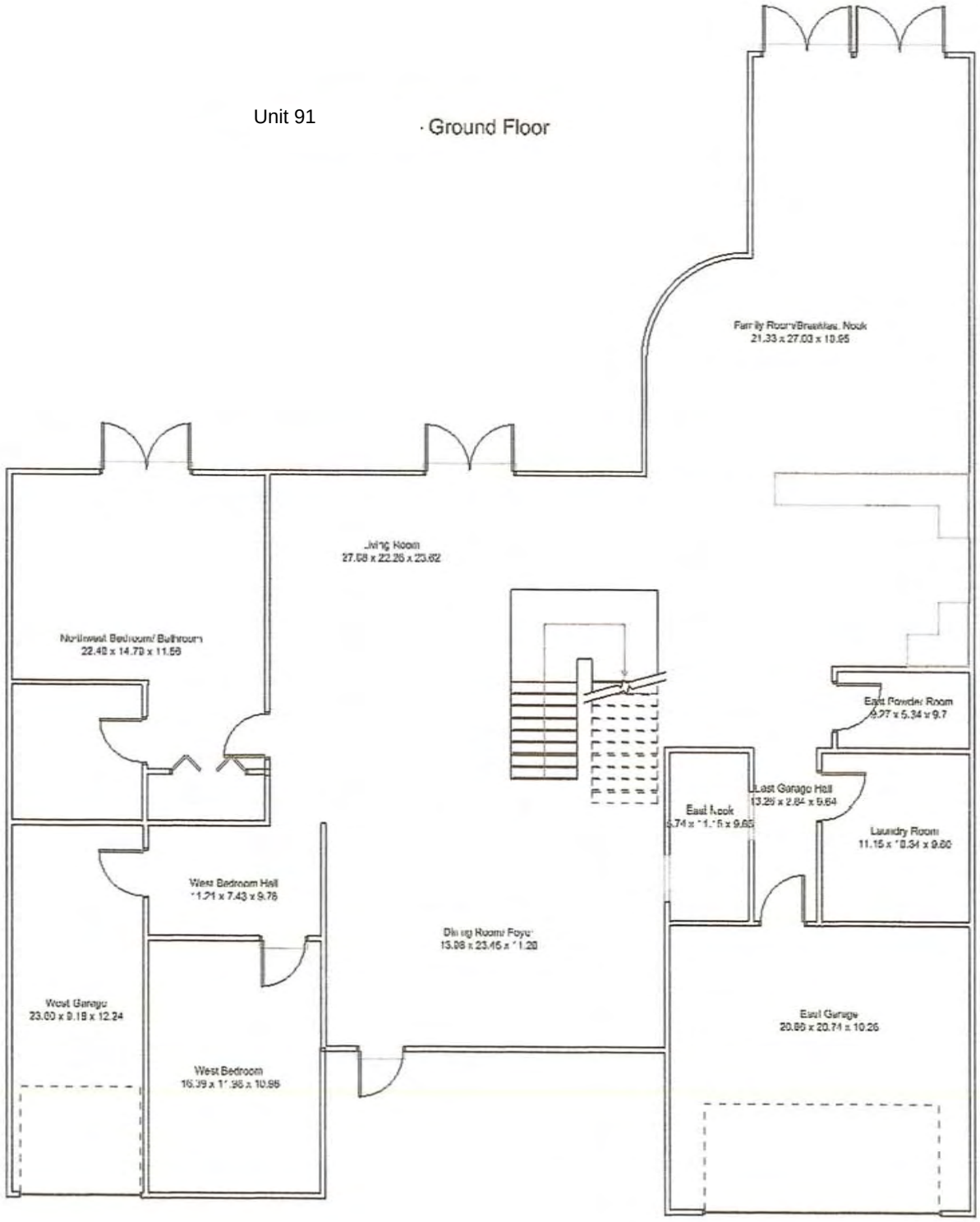
Unit 90

- Second Floor

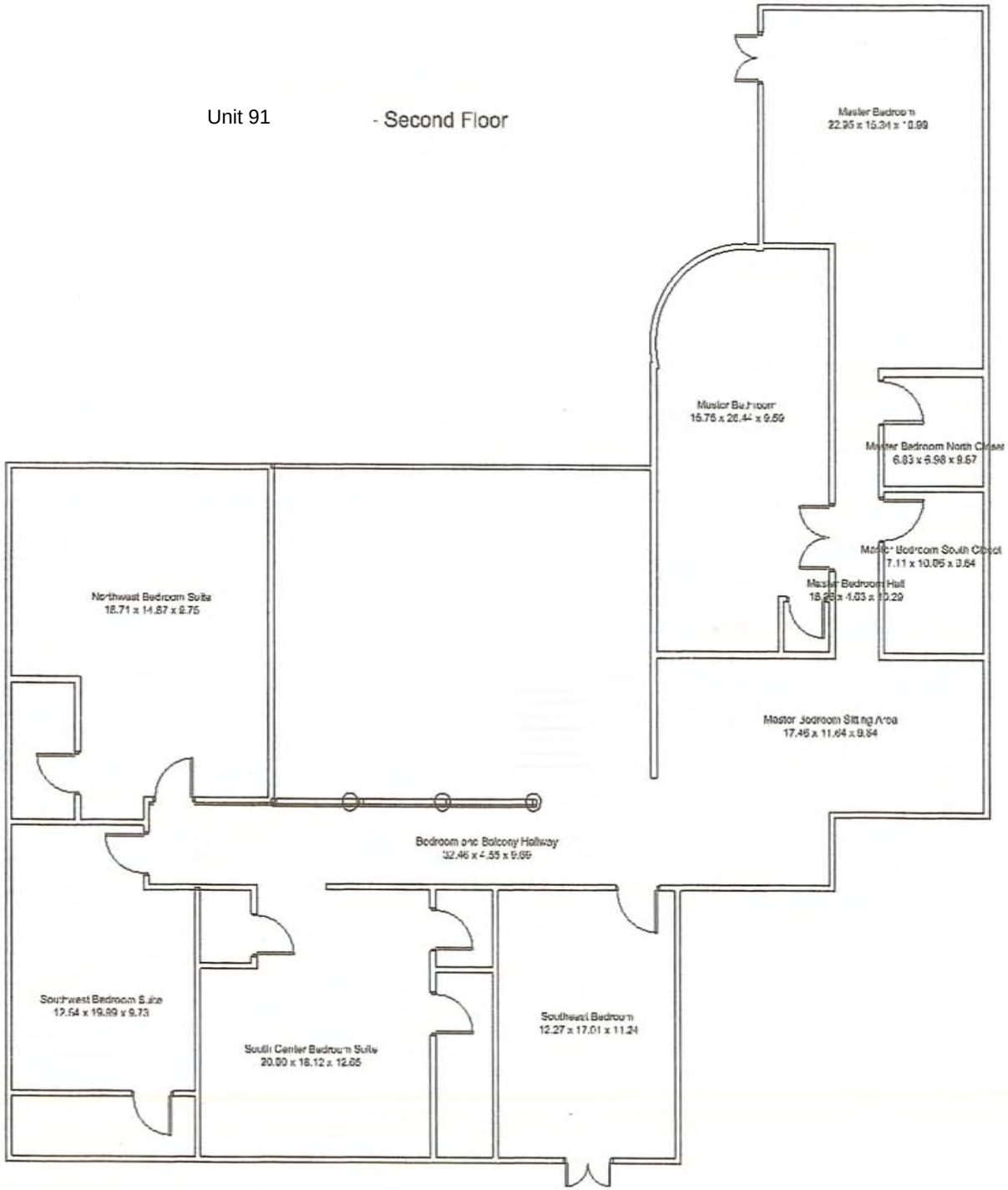


Unit 91

Ground Floor



Unit 91 - Second Floor



Appendix C

Units 80 & 81 Sulfur Containing Gas Results

	A	B	C	D	E	F	G	H	I	J	K	L
1		**TABLE 1**										
2		**SUMMARY OF AIR ANALYTICAL RESULTS Columbia Analytical Services**										
3		**Method: Sulfur Compounds in Air By ASTM D5504-08 Matrix: AIR**										
4		**Project Name: FDOH - Chinese Wallboard**										
5		Project No: P0901512										
6		Site Location: Unit 80 & 81- North Fort Myers, FL										
7			090504-RS-37	090504-RS-38	090504-RS-39	090505-RS-40	*090504-RS-41*	090504-RS-54	090504-RS-55	090504-RS-56	090504-RS-57	090504-RS-58
8			P0901512-001	P0901512-002	P0901512-003	P0901512-004	*P0901512-005*	P0901512-018	P0901512-019	P0901512-020	P0901512-021	P0901512-022
9												
10						**Test Home**						
11		**Home Identification**	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80
12		**Sample Location**	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E
13		**Location Description**	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR
14		**Sampling Date & Time**	5/4/09 10:00	5/4/09 10:00	5/4/09 10:00	5/4/09 10:00	5/4/09 10:00	5/4/09 15:45	5/4/09 15:45	5/4/09 15:45	5/4/09 15:45	5/4/09 15:45
15		**Hydrogen Sulfide**	U	U	U	U	***U***	U	U	U	*	U
16		**Carbonyl Sulfide**	U	U	U	U	***U***	U	U	U	*	U
17		Methyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
18		Ethyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
19		Dimethyl Sulfide	U	U	U	U	***U***	U	U	U	*	U
20		**Carbon Disulfide**	U	U	U	U	***U***	U	U	**2.5**	*	U
21		Isopropyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
22		tert-Butyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
23		n-Propyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
24		Ethyl Methyl Sulfide	U	U	U	U	***U***	U	U	U	*	U
25		Thiophene	U	U	U	U	***U***	U	U	U	*	U
26		Isobutyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
27		n-Butyl Mercaptan	U	U	U	U	***U***	U	U	U	*	U
28		Diethyl Sulfide	U	U	U	U	***U***	U	U	U	*	U
29		3-Methyl Thiophene	U	U	U	U	***U***	U	U	U	*	U
30		Tetrahydrothiophene	U	U	U	U	***U***	U	U	U	*	U
31		Dimethyl Disulfide	U	U	U	U	***U***	U	U	U	*	U
32		2-Ethyl Thiophene	U	U	U	U	***U***	U	U	U	*	U
33		Diethyl Disulfide	U	U	U	U	***U***	U	U	U	*	U
34		2,5-Dimethyl Thiophene	U	U	U	U	***U***	U	U	U	*	U
35												
36												
37												
38												
39		"U" Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the										
40		specified component was not detected. The value associated with the qualifier shall be the laboratory										
41		method detection limit.										
42												
43		"***U***" (Bold-Italicized) indicates samples arrived at laboratory with insufficient hold time remaining to complete the analysis										
44		within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory and the data										
45		flagged to indicatethe holding time exceedances.										
46												
47		* Not analyzed due to interference. Bag was deflated upon arrival at lab										

	A	B	M	N	O	P	Q	R	S	T	U	V
1			**TABLE 1**									
2			**SUMMARY OF AIR ANALYTICAL RESULTS Columbia Analytical Services**									
3			**Method: Sulfur Compounds in Air By ASTM D5504-08 Matrix: AIR**									
4			**Project Name: FDOH - Chinese Wallboard**									
5			Project No: P0901512									
6			Site Location: Unit 80 & 81- North Fort Myers, FL									
7			*090504-RS-42*	*090504-RS-43*	*090504-RS-44*	*090504-RS-45*	*090504-RS-46*	090504-RS-59	090504-RS-60	090504-RS-61	090504-RS-62	090504-RS-63
8			*P0901512-006*	*P0901512-007*	*P0901512-008*	*P0901512-009*	*P0901512-010*	P0901512-023	P0901512-024	P0901512-025	P0901512-026	P0901512-027
9												
10							**Control Home**					
11		**Home Identification**	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81
12		**Sample Location**	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E
13		**Location Description**	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR
14		**Sampling Date & Time**	5/4/09 10:15	5/4/09 10:15	5/4/09 10:15	5/4/09 10:15	5/4/09 10:15	5/4/09 15:55	5/4/09 15:55	5/4/09 15:55	5/4/09 15:55	5/4/09 15:55
15		**Hydrogen Sulfide**	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
16		**Carbonyl Sulfide**	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
17		Methyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
18		Ethyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
19		Dimethyl Sulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
20		**Carbon Disulfide**	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
21		Isopropyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
22		tert-Butyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
23		n-Propyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
24		Ethyl Methyl Sulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
25		Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
26		Isobutyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
27		n-Butyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
28		Diethyl Sulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
29		3-Methyl Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
30		Tetrahydrothiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
31		Dimethyl Disulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
32		2-Ethyl Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
33		Diethyl Disulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
34		2,5-Dimethyl Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U
35												
36												
37												
38												
39		"U" Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the										
40		specified component was not detected. The value associated with the qualifier shall be the laboratory										
41		method detection limit.										
42												
43		"***U***" (Bold-Italicized) indicates samples arrived at laboratory with insufficient hold time remaining to complete the analysis										
44		within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory and the data										
45		flagged to indicatethe holding time exceedances.										
46												
47		* Not analyzed due to interference. Bag was deflated upon arrival at lab										

	A	B	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1			**TABLE 1**													
2			**SUMMARY OF AIR ANALYTICAL RESULTS Columbia Analytical Services**													
3			**Method: Sulfur Compounds in Air By ASTM D5504-08 Matrix: AIR**													
4			**Project Name: FDOH - Chinese Wallboard**													
5			Project No: P0901512													
6			Site Location: Unit 80 & 81- North Fort Myers, FL													
7			*090504-RS-47*	*090504-RS-48*	*090504-RS-49*	*090504-RS-50*	*090504-RS-51*	090504-RS-64	090504-RS-65	090504-RS-66	090504-RS-67	090504-RS-68	*090504-RS-52*	*090504-RS-53*	090504-RS-69	090504-RS-70
8			*P0901512-011*	*P0901512-012*	*P0901512-013*	*P0901512-014*	*P0901512-015*	P0901512-028	P0901512-029	P0901512-030	P0901512-031	P0901512-032	*P0901512-016*	*P0901512-017*	P0901512-033	P0901512-034
9																
10							**Outside Air**									
11		**Home Identification**	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 81	Unit 80	Uniit 81
12		**Sample Location**	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Blank	Blank	Blank	Blank
13		**Location Description**	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	1st FL LR	2nd FL BR	2nd FL LR	1st FL BR
14		**Sampling Date & Time**	5/4/09 10:30	5/4/09 10:30	5/4/09 10:30	5/4/09 10:30	5/4/09 10:30	5/4/09 16:05	5/4/09 16:05	5/4/09 16:05	5/4/09 16:05	5/4/09 16:05	5/4/09 10:45	5/4/09 10:45	5/4/09 16:15	5/4/09 16:15
15		**Hydrogen Sulfide**	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
16		**Carbonyl Sulfide**	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	**6.1**	U
17		Methyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
18		Ethyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
19		Dimethyl Sulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
20		**Carbon Disulfide**	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
21		Isopropyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
22		tert-Butyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
23		n-Propyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
24		Ethyl Methyl Sulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
25		Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
26		Isobutyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
27		n-Butyl Mercaptan	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
28		Diethyl Sulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
29		3-Methyl Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
30		Tetrahydrothiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
31		Dimethyl Disulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
32		2-Ethyl Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
33		Diethyl Disulfide	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
34		2,5-Dimethyl Thiophene	***U***	***U***	***U***	***U***	***U***	U	U	U	U	U	***U***	***U***	U	U
35																
36																
37																
38																
39		"U" Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the														
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43		"***U***" (Bold-Italicized) indicates samples arrived at laboratory with insufficient hold time remaining to complete the analysis														
44		within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory and the data														
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46																
47		* Not analyzed due to interference. Bag was deflated upon arrival at lab														

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC.
An Employee - Owned Company

LABORATORY REPORT

May 19, 2009

Rene' Salazar, Ph.D., CIH
Salazar Consulting Group, Inc.
6607 Heatherton Court
Tampa, FL 33617

RE: FDOH / Chinese Wallboard / 1406.01 / Units 80 & 81

Dear Rene':

Enclosed are the results of the samples submitted to our laboratory on May 5, 2009. For your reference, these analyses have been assigned our service request number P0901512.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 45 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

NELAP Accredited ACIL Seal of Excellence Award 100% Recycled

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Client: Salazar Consulting Group, Inc. CAS Project No: P0901512
Project: FDOH / Chinese Wallboard / 1406.01 / Location No. 1

CASE NARRATIVE

The samples were received intact under chain of custody on May 5, 2009 and were stored in accordance with the analytical method requirements. Sample 090504-RS-57(PM) (P0901512-021) was received flat and could not be analyzed. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Sulfur Analysis

Samples P0901512-005 thru P0901512-017 were received with insufficient hold time remaining to complete the analysis within the recommended limit. The analysis was performed as soon as possible after receipt by the laboratory and the data flagged to indicate the holding time exceedances.

The samples were analyzed for twenty sulfur compounds per ASTM D 5504-01 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

NELAP Accredited ACIL Seal of Excellence Award 100% Recycled

Client: Salazar Consulting Group, Inc.
Project: FDOH / Chinese Wallboard/1406.01 / Unit 80 & 81

Service Request: P0901512

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0901512-001	090504-RS-37(AM)	5/4/09	10:00
P0901512-002	090504-RS-38(AM)	5/4/09	10:00
P0901512-003	090504-RS-39(AM)	5/4/09	10:00
P0901512-004	090504-RS-40(AM)	5/4/09	10:00
P0901512-005	090504-RS-41(AM)	5/4/09	10:00
P0901512-006	090504-RS-42(AM)	5/4/09	10:15
P0901512-007	090504-RS-43(AM)	5/4/09	10:15
P0901512-008	090504-RS-44(AM)	5/4/09	10:15
P0901512-009	090504-RS-45(AM)	5/4/09	10:15
P0901512-010	090504-RS-46(AM)	5/4/09	10:15
P0901512-011	090504-RS-47(AM)	5/4/09	10:30
P0901512-012	090504-RS-48(AM)	5/4/09	10:30
P0901512-013	090504-RS-49(AM)	5/4/09	10:30
P0901512-014	090504-RS-50(AM)	5/4/09	10:30
P0901512-015	090504-RS-51(AM)	5/4/09	10:30
P0901512-016	090504-RS-52(AM)	5/4/09	10:45
P0901512-017	090504-RS-53(AM)	5/4/09	10:45
P0901512-018	090504-RS-54(PM)	5/4/09	15:45
P0901512-019	090504-RS-55(PM)	5/4/09	15:45
P0901512-020	090504-RS-56(PM)	5/4/09	15:45
P0901512-021	090504-RS-57(PM)	5/4/09	15:45
P0901512-022	090504-RS-58(PM)	5/4/09	15:45
P0901512-023	090504-RS-59(PM)	5/4/09	15:55
P0901512-024	090504-RS-60(PM)	5/4/09	15:55
P0901512-025	090504-RS-61(PM)	5/4/09	15:55
P0901512-026	090504-RS-62(PM)	5/4/09	15:55
P0901512-027	090504-RS-63(PM)	5/4/09	15:55
P0901512-028	090504-RS-64(PM)	5/4/09	16:05
P0901512-029	090504-RS-65(PM)	5/4/09	16:05
P0901512-030	090504-RS-66(PM)	5/4/09	16:05
P0901512-031	090504-RS-67(PM)	5/4/09	16:05
P0901512-032	090504-RS-68(PM)	5/4/09	16:05
P0901512-033	090504-RS-69(PM)	5/4/09	16:15
P0901512-034	090504-RS-70(PM)	5/4/09	16:15

3

Air - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P090512

CAS Contact

Company Name & Address (Reporting Information): Salazar Consulting Group, Inc. 6607 Heatherton Court Tampa, FL 33617

Project Name: FDOH / Chinese Wallboard

Project Number: 1406.01 Units 80 & 81

Project Manager: R. Salazar

P.O. # / Billing Information

Phone: (813) 748-6634 Fax: (813) 988-7486

Email Address for Result Reporting: rsalazar@salazarconsultinggroup.com

Sampler (Print & Sign): R. Salazar

Analysis Method and/or Analytes

Comments e.g. Actual Preservative or specific instructions

	Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume					
18	090504-RS-37(AM)	1	5/4/09	AM	Air				ASTM	5504	/20	Reduced sulfurs	
19	090504-RS-38(AM)	2											
20	090504-RS-39(AM)	3											
21	090504-RS-40(AM)	4											
22	090504-RS-41(AM)	5											
23	090504-RS-42(AM)	6											
24	090504-RS-43(AM)	7											
25	090504-RS-44(AM)	8											
26	090504-RS-45(AM)	9											
27	090504-RS-46(AM)	10											
30	090504-RS-47(AM)	11											
31	090504-RS-48(AM)	12											
32	090504-RS-49(AM)	13											
33	090504-RS-50(AM)	14											
34	090504-RS-51(AM)	15											

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
EDD required Yes / No
Type: ____ EDD Units: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
R. Salazar	5/4/09		[illegible]	5/5/09	0515
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank
Temperature ____ °C

Air - Chain of Custody Record & Analytical Service Request

Columbia Analytical Services INC.
An Employee - Owned Company
2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0905152

CAS Contact

Company Name & Address (Reporting Information): Salazar Consulting Group, Inc. 4607 Heatherton Court Tampa, FL 33617

Project Name: FDOH/Chinese Wallboard

Project Number: 1406.01 / Units 80 & 81

Project Manager: R. Salazar

P.O. # / Billing Information

Phone: (813) 748-2634 Fax: (813) 988-7486

Email Address for Result Reporting: salazar@salazarconsulting group.com

Sampler (Print & Sign): R. Salazar

Analysis Method and/or Analytes

	Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume					Comments e.g. Actual Preservative or specific instructions
28	090504-RS-52(AM)	16	5/4/09	AM	CONTROL				ASTM D5504/20		Reduced Sulfurs		
29	090504-RS-53(AM)	17	↓	↓	CONTROL				↓		↓		↓
1	090504-RS-54(PM)	18		PM									
2	090504-RS-55(PM)	19											
3	090504-RS-56(PM)	20											
4	090504-RS-57(PM)	21											
5	090504-RS-58(PM)	22											
6	090504-RS-59(PM)	23											
7	090504-RS-60(PM)	24											
8	090504-RS-61(PM)	25											
9	090504-RS-62(PM)	26											
10	090504-RS-63(PM)	27											
13	090504-RS-64(PM)	28											
14	090504-RS-65(PM)	29											
15	090504-RS-66(PM)	30	↓	↓					↓		↓		↓

*Analyze in order starting with No. 1! *

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
EDD required Yes / No
Type: _____ EDD Units: _____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
R. Salazar	5/4/09		[illegible]	5/5/09	0815
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank
Temperature _____ °C

Air - Chain of Custody Record & Analytical Service Request

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An Employee - Owned Company
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Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day - Standard

CAS Project No. P0901512

CAS Contact

Company Name & Address (Reporting Information): Solazar Consulting Group, Inc. 6607 Heatherton Court Tampa, FL 33617

Project Name: FDOT/Chinese Wallboard

Project Number: 1406.01 / Units 80 & 81

Project Manager: R. Salazar

P.O. # / Billing Information

Phone: (813) 748-6634 Fax: (813) 988-7486

Email Address for Result Reporting: rsalazar@solazarconsulting group.com

Sampler (Print & Sign): R. Salazar

Analysis Method and/or Analytes

	Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Sample Type (Air/Tube/ Solid)	Canister ID (Bar Code # - AC, SC, etc.)	Flow Controller (Bar Code - FC #)	Sample Volume					Comments e.g. Actual Preservative or specific instructions
16	090504-RS-67(PM)	31	5/4/09	PM					ASTM D/5504/20 Reduced Sulfurs				
17	090504-RS-68(PM)	32											
11	090504-RS-69(PM)	33			CONTROL								
12	090504-RS-70(PM)	34			CONTROL								

* Analyze in order starting with No. 1 *

Report Tier Levels - please select
Tier I - (Results/Default if not specified) ____
Tier II - (Results + QC) ____
Tier III - (Data Validation Package) 10% Surcharge ____
Tier V - (client specified) ____
EDD required Yes / No
Type: ____ EDD Units: ____

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 5/4/09	Time:	Received by: (Signature)	Date: 5/5/09	Time: 0815
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank
Temperature ____ °C

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Salazar Consulting Group, Inc. Work order: P0901512

Project: FDOH / Chinese Wallboard / 1406.01 / Units 80 & 81

Sample(s) received on: 05/05/09 Date opened: 05/05/09 by: MZAMORA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS**?	☐	☒	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Was a **chain-of-custody** provided?	☒	☐	☐
5	Was the **chain-of-custody** properly completed?	☐	☒	☐
6	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
7	Was **sample volume** received adequate for analysis?	☒	☐	☐
8	Are samples within specified holding times?	☒	☐	☐
9	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
	Cooler Temperature _____ °C Blank Temperature _____ °C			
10	Was a **trip blank** received?	☐	☒	☐
	Trip blank supplied by CAS: _____			
11	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
12	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
13	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
14	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0901512-001.01	1 L Zefon Bag					
P0901512-002.01	1 L Zefon Bag					
P0901512-003.01	1 L Zefon Bag					
P0901512-004.01	1 L Zefon Bag					
P0901512-005.01	1 L Zefon Bag					
P0901512-006.01	1 L Zefon Bag					

Explain any discrepancies: (include lab sample ID numbers):

Chain of Custody is missing time collected

Per Rene' S. 5/11/09 0733 e-mail sampling times were entered. SMA

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Salazar Consulting Group, Inc. Work order: P0901512

Project: FDOH / Chinese Wallboard / 1406.01 / Location No. 1

Sample(s) received on: 05/05/09 Date opened: 05/05/09 by: MZAMORA

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0901512-007.01	1 L Zefon Bag					
P0901512-008.01	1 L Zefon Bag					
P0901512-009.01	1 L Zefon Bag					
P0901512-010.01	1 L Zefon Bag					
P0901512-011.01	1 L Zefon Bag					
P0901512-012.01	1 L Zefon Bag					
P0901512-013.01	1 L Zefon Bag					
P0901512-014.01	1 L Zefon Bag					
P0901512-015.01	1 L Zefon Bag					
P0901512-016.01	1 L Zefon Bag					
P0901512-017.01	1 L Zefon Bag					
P0901512-018.01	1 L Zefon Bag					
P0901512-019.01	1 L Zefon Bag					
P0901512-020.01	1 L Zefon Bag					
P0901512-021.01	1 L Zefon Bag					Received Tedlar bag flat
P0901512-022.01	1 L Zefon Bag					
P0901512-023.01	1 L Zefon Bag					
P0901512-024.01	1 L Zefon Bag					
P0901512-025.01	1 L Zefon Bag					
P0901512-026.01	1 L Zefon Bag					
P0901512-027.01	1 L Zefon Bag					
P0901512-028.01	1 L Zefon Bag					
P0901512-029.01	1 L Zefon Bag					
P0901512-030.01	1 L Zefon Bag					
P0901512-031.01	1 L Zefon Bag					
P0901512-032.01	1 L Zefon Bag					
P0901512-033.01	1 L Zefon Bag					
P0901512-034.01	1 L Zefon Bag					

Explain any discrepancies: (include lab sample ID numbers):

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);

Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-37(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-001

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 10:00
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 08:57
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ro Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-38(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-002

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 10:00
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 09:16
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-39(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-003

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 10:00
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 09:35
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Rc Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-40(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-004

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 10:00
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 09:54
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-41(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-005

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:00
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 10:11
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: Rc Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-42(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-006

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 13:18
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-43(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-007

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 13:41
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: Rcs Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-44(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-008

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 14:03
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-45(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-009

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 14:39
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-46(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-010

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 15:01
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-47(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-011

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:30
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 15:19
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-48(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-012

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:30
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 15:41
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RO Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-49(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-013

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:30
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 15:19
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-50(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-014

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:30
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 15:01
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: Rer Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-51(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-015

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:30
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 14:21
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: EG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-52(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Blank

CAS Project ID: P0901512
CAS Sample ID: P0901512-016

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:45
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 14:03
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: Rw Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-53(AM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81 Blank

CAS Project ID: P0901512
CAS Sample ID: P0901512-017

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes: **H1**

Date Collected: 5/4/09
Time Collected: 10:45
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 13:41
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
H1 = Sample analysis performed past holding time. See case narrative.

Verified By: Re Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-54(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-018

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:45
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 10:48
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Rev Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-55(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-019

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:45
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 11:10
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Rev Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-56(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-020

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:45
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 12:04
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	**Carbon Disulfide**	**7.8**	7.8	**2.5**	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-58(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80

CAS Project ID: P0901512
CAS Sample ID: P0901512-022

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:45
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 12:25
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-59(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-023

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:55
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 12:43
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ru Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-60(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-024

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:55
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 13:00
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-61(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-025

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:55
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 12:43
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Rc Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-62(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-026

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:55
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 12:25
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-63(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81

CAS Project ID: P0901512
CAS Sample ID: P0901512-027

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 15:55
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 12:03
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RG Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-64(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-028

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:05
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 11:33
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Rec Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-65(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-029

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:05
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 11:11
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RW Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-66(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-030

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:05
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 10:11
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ro Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-67(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-031

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:05
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 09:53
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ks Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-68(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Outside

CAS Project ID: P0901512
CAS Sample ID: P0901512-032

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:05
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 09:34
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ro Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-69(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 80 Blank

CAS Project ID: P0901512
CAS Sample ID: P0901512-033

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 11:32
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	**Carbonyl Sulfide**	**15**	12	**6.1**	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RV Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **090504-RS-70(PM)**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Unit 81 Blank

CAS Project ID: P0901512
CAS Sample ID: P0901512-034

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: 5/4/09
Time Collected: 16:15
Date Received: 5/5/09
Date Analyzed: 5/5/09
Time Analyzed: 08:57
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Rc Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Units 80 & 81

CAS Project ID: P0901512
CAS Sample ID: P090505-MB

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 5/05/09
Time Analyzed: 07:56
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Re Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01** / Units 80 & 81

CAS Project ID: P0901512
CAS Sample ID: P090505-MB

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 5/05/09
Time Analyzed: 07:40
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: RW Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **Lab Control Sample**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Units 80 & 81

CAS Project ID: P0901512
CAS Sample ID: P090505-LCS

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/05/09
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	CAS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	2,020	**2,030**	**100**	63-136	
463-58-1	Carbonyl Sulfide	2,020	**1,990**	**99**	69-122	
74-93-1	Methyl Mercaptan	2,020	**2,310**	**114**	71-137	

Verified By: Lu Date: 5/19/09

COLUMBIA ANALYTICAL SERVICES, INC.

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Salazar Consulting Group, Inc.**
Client Sample ID: **Lab Control Sample**
Client Project ID: **FDOH / Chinese Wallboard / 1406.01 /** Units 80 & 81

CAS Project ID: P0901512
CAS Sample ID: P090505-LCS

Test Code: ASTM D 5504-01
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Chris Cornett
Sampling Media: 1.0 L Zefon Bag
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/05/09
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	CAS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	2,020	**1,870**	**93**	63-136	
463-58-1	Carbonyl Sulfide	2,020	**1,980**	**98**	69-122	
74-93-1	Methyl Mercaptan	2,020	**2,130**	**105**	71-137	

Verified By: KG Date: 5/19/09

Appendix D

Units 90 & 91 Sulfur Containing Gas Results

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		**TABLE 2**												
2		**SUMMARY OF AIR ANALYTICAL RESULTS Lakeland Laboratories**												
3		**Method: Sulfur Compounds in Air By ASTM D5504-08 Matrix: AIR**												
4		**Project Name: FDOH - Chinese Wallboard**												
5		Project No: 1406.01												
6		Site Location: Unit 90 & 91- Parkland, FL												
7			090608-RS-17	090608-RS-22	090608-RS-26	090609-RS-30	090609-RS-34	090609-RS-38	090608-RS-15	090608-RS-19	090608-RS-24	090608-RS-29	090609-RS-32	090609-RS-36
8														
9														
10								**Test Home**						
11		**Home Identification**	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90
12		**Sample Location**	Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2
13		**Location Description**	2nd FL LR	2nd FL LR	2nd FL LR	2nd FL LR	2nd FL LR	2nd FL LR	1st FL BR	1st FL BR	1st FL BR	1st FL BR	1st FL BR	1st FL BR
14		**Sampling Date & Time**	06/08/09 13:35	06/08/09 17:35	06/08/09 21:45	06/09/09 01:35	06/09/09 05:30	06/09/09 09:35	06/08/09 11:30	06/08/09 15:35	06/08/09 19:35	06/08/09 23:50	06/09/09 03:35	06/09/09 07:35
15		**Hydrogen Sulfide**	U	U	U	U	U	**5.72**	U	U	U	U	U	U
16		**Carbonyl Sulfide**	U	U	4.14 I	U	U	U	U	U	U	U	U	U
17		Methyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
18		Ethyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
19		Dimethyl Sulfide	U	U	U	U	U	U	U	U	U	U	U	U
20		**Carbon Disulfide**	U	U	U	U	U	U	U	U	U	U	U	U
21		Isopropyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
22		tert-Butyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
23		n-Propyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
24		Ethyl Methyl Sulfide	U	U	U	U	U	U	U	U	U	U	U	U
25		Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
26		Isobutyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
27		n-Butyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
28		Diethyl Sulfide	U	U	U	U	U	U	U	U	U	U	U	U
29		3-Methyl Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
30		Tetrahydrothiophene	U	U	U	U	U	U	U	U	U	U	U	U
31		Dimethyl Disulfide	U	U	U	U	U	U	U	U	U	U	U	U
32		2-Ethyl Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
33		Diethyl Disulfide	U	U	U	U	U	U	U	U	U	U	U	U
34		2,5-Dimethyl Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
35														
36														
37														
38														
39		"U" Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the												
40		specified component was not detected. The value associated with the qualifier shall be the laboratory												
41		method detection limit.												
42														
43		"I" The reported value is between the laboratory method detection limit and the laboratory practical quantitation												
44		limit.												
45														
46		"D" The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to												
47		matrix interference. Dilution factors are included in the final results. The result is from a diluted sample												
48														
49		* Not analyzed due to interference Bag was deflated upon arrival at lab												

	A	B	O	P	Q	R	S	T	U	V	W	X	Y	Z
1			**TABLE 2**											
2			**SUMMARY OF AIR ANALYTICAL RESULTS Lakeland Laboratories**											
3			**Method: Sulfur Compounds in Air By ASTM D5504-08 Matrix: AIR**											
4			**Project Name: FDOH - Chinese Wallboard**											
5			Project No: 1406.01											
6			Site Location: Unit 90 & 91- Parkland, FL											
7			090608-RS-01	090608-RS-03	090608-RS-06	090609-RS-08	090609-RS-10	090609-RS-12	090608-RS-02	090608-RS-05	090608-RS-07	090609-RS-09	090609-RS-11	090609-RS-13
8														
9														
10								**Control Home**						
11		**Home Identification**	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91
12		**Sample Location**	Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2
13		**Location Description**	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	2nd FL BR	2nd FL BR	2nd FL BR	2nd FL BR	2nd FL BR	2nd FL BR
14		**Sampling Date & Time**	06/08/09 12:30	06/08/09 16:30	06/08/09 21:05	06/09/09 00:30	06/09/09 04:30	06/09/09 08:30	06/08/09 14:30	06/08/09 18:30	06/08/09 22:30	06/09/09 02:30	06/09/09 06:30	06/09/09 10:30
15		**Hydrogen Sulfide**	U	U	U	U	U	U	U	U	U	U	U	U
16		**Carbonyl Sulfide**	U	U	U	U	U	U	U	U	U	U	U	U
17		Methyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
18		Ethyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
19		Dimethyl Sulfide	U	U	U	U	U	U	U	U	U	U	U	U
20		**Carbon Disulfide**	U	U	U	U	U	U	U	U	U	U	U	U
21		Isopropyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
22		tert-Butyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
23		n-Propyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
24		Ethyl Methyl Sulfide	U	U	U	U	U	U	U	U	U	U	U	U
25		Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
26		Isobutyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
27		n-Butyl Mercaptan	U	U	U	U	U	U	U	U	U	U	U	U
28		Diethyl Sulfide	U	U	U	U	U	U	U	U	U	U	U	U
29		3-Methyl Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
30		Tetrahydrothiophene	U	U	U	U	U	U	U	U	U	U	U	U
31		Dimethyl Disulfide	U	U	U	U	U	U	U	U	U	U	U	U
32		2-Ethyl Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
33		Diethyl Disulfide	U	U	U	U	U	U	U	U	U	U	U	U
34		2,5-Dimethyl Thiophene	U	U	U	U	U	U	U	U	U	U	U	U
35														
36														
37														
38														
39		"U" Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the												
40		specified component was not detected. The value associated with the qualifier shall be the laboratory												
41		method detection limit.												
42														
43		"I" The reported value is between the laboratory method detection limit and the laboratory practical quantitation												
44		limit.												
45														
46		"D" The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to												
47		matrix interference. Dilution factors are included in the final results. The result is from a diluted sample												
48														
49		* Not analyzed due to interference Bag was deflated upon arrival at lab												

	A	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP
1			TABLE 2															
2			SUMMARY OF AIR ANALYTICAL RESULTS Lakeland Laboratories															
3			Method: Sulfur Compounds in Air By ASTM D5504-08 Matrix: AIR															
4			Project Name: FDOH - Chinese Wallboard															
5			Project No: 1406.01															
6			Site Location: Unit 90 & 91- Parkland, FL															
7			090608-RS-16	090608-RS-18	090608-RS-20	090608-RS-23	090608-RS-25	090608-RS-27	090608-RS-28	090609-RS-31	090609-RS-33	090609-RS-35	090609-RS-37	090609-RS-39	090608-RS-04	090609-RS-14	090608-RS-21	090609-RS-40
8																		
9																		
10								Outside Air										
11		**Home Identification**	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 91	Unit 91	Unit 90	Uniit 90
12		**Sample Location**	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Blank	Blank	Blank	Blank
13		**Location Description**	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	1st FL LR	2nd FL BR	2nd FL LR	1st FL BR
14		**Sampling Date & Time**	06/08/09 11:35	06/08/09 13:35	06/08/09 15:35	6/8/2009 17:40	06/08/09 19:40	06/08/09 21:50	06/08/09 23:45	06/09/09 01:40	06/09/09 04:00	06/09/09 05:30	06/09/09 07:35	06/09/09 09:35	06/08/09 16:30	06/09/09 10:45	06/08/09 15:35	06/09/09 10:45
15		**Hydrogen Sulfide**	U	U	U	*	U	U	U	U	**7.14**	U	**6.09**	U	U	U	U	U
16		**Carbonyl Sulfide**	U	U	U	*	U	U	U	U	U	U	U	U	U	U	160 D	U
17		Methyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
18		Ethyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
19		Dimethyl Sulfide	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
20		**Carbon Disulfide**	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
21		Isopropyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	4.90 I	U
22		tert-Butyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
23		n-Propyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
24		Ethyl Methyl Sulfide	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
25		Thiophene	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
26		Isobutyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
27		n-Butyl Mercaptan	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
28		Diethyl Sulfide	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
29		3-Methyl Thiophene	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
30		Tetrahydrothiophene	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
31		Dimethyl Disulfide	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
32		2-Ethyl Thiophene	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
33		Diethyl Disulfide	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
34		2,5-Dimethyl Thiophene	U	U	U	*	U	U	U	U	U	U	U	U	U	U	U	U
35																		
36																		
37																		
38																		
39		"U" Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the																
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41		method detection limit.																
42																		
43		"I" The reported value is between the laboratory method detection limit and the laboratory practical quantitation																
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45																		
46		"D" The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to																
47		matrix interference. Dilution factors are included in the final results. The result is from a diluted sample																
48																		
49		* Not analyzed due to interference Bag was deflated upon arrival at lab																

Analytical Report #: 19318

for

Salazar Consulting Group, Inc.

Project Manager: Rene R. Salazar, PhD

Project Name: FDOH - Chinese Wallboard

Project ID: 1406.01

Project Location: Units 90 & 91 **- Parkland, FL**

17-JUN-09

LAKELAND LABORATORIES

NELAP Certification Number: E84880

1910 Harden Boulevard, Suite 101
Lakeland, Florida 33803-1829
Phone: (863) 686-4271
Fax: (863) 686-4389

LAKELAND LABORATORIES

17-JUN-09

Rene R. Salazar, PhD
Salazar Consulting Group, Inc.
6607 Heatherton Court
Tampa, FL 33617

Reference: LAKELAND Work Order No: **19318**
FDOH - Chinese Wallboard
Project Location: Units 90 & 91 · Parkland, FL
Project Ref No: 1406.01
Lab Quote No:

Dear Rene R. Salazar, PhD :

The attached Analytical and QC Summaries list the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Lakeland Laboratories Work Order numbered **19318**.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Lakeland Laboratories is limited in liability to the actual cost of the pertinent analysis done. Your samples will be retained by Lakeland Laboratories for a period of 30 days following receipt of the samples. After that time, they will be properly disposed of without further notice, unless there is a pre-arranged contractual arrangement. We reserve the right to return any unused samples, extracts or related solutions to you, if we consider it necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Lakeland Laboratories. This report will be filed for at least 3 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you.

We thank you for selecting Lakeland Laboratories Incorporated to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Sincerely,

Mark A. Alessandroni, PE
Technical Director

1910 Harden Boulevard, Suite 101
Lakeland, Florida 33803-1829
Phone: (863) 686-4271
Fax: (863) 686-4389

CASE NARRATIVE

LAKELAND LABORATORIES

Client Name: Salazar Consulting Group, Inc.

Project Name: FDOH - Chinese Wallboard

Project ID:	*1406.01*	*Report Date:*	*17-JUN-09*
Work Order Number:	*19318*	*Date Received:*	*09-JUN-09*

Sample receipt non conformances and Comments:

Samples were retrieved from the field sampling representative by a lab representative at 10:45 AM on June 9, 2009 and transported directly to the laboratory. All samples, with the exception of Client Sample ID 090608-RS-23, were analyzed June 9-10, 2009 within the mandated holding time of 24 hours. The Tedlar bag labeled Sample ID 090608-RS-23 contained insufficient volume for analysis, so no results are reported for this sample. Unless noted elsewhere in the report, no deviations from the laboratory SOP were made.

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch:	*LBA-67413*	*Sulfur Compounds in Air By ASTM D5504-08*
Six compounds, namely n-propyl mercaptan, thiophene, diethyl sulfide, tetrahydrothiophene, dimethyl disulfide, and diethyl disulfide exhibited low biases (accuracy), slightly outside the acceptance range, in the matrix spike and/or matrix spike duplicate. Diethyl sulfide fell outside acceptance limits for relative percent difference (precision) in the MS-MSD QC pair. With the exception of diethyl sulfide, all compounds were within acceptance limits for precision and accuracy in the BKS-BSD, also known as LCS-LCSD QC pair. This compound fell outside acceptance limits for relative percent difference (precision). A method reporting limit (MRL) standard was run at the end of the analytical sequence and all target analytes were detected, confirming sensitivity of the analytical system. Consequently, impact to the data from these QC precision and accuracy nonconformances is inferred to be negligible.		

Batch:	*LBA-67414*	*Sulfur Compounds in Air By ASTM D5504-08*
Three compounds, namely ethyl mercaptan, tetrahydrothiophene, and diethyl disulfide exhibited low biases (accuracy), slightly outside the acceptance range, in the matrix spike. Ethyl mercaptan also fell outside acceptance limits for relative percent difference (precision) in the MS-MSD QC pair. All compounds were within acceptance limits for precision and accuracy in the BKS-BSD, also known as LCS-LCSD QC pair. A method reporting limit (MRL) standard was run at the end of the analytical sequence and all target analytes were detected, confirming sensitivity of the analytical system.		

Certificate of Analysis Summary 19318

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-09-09 10:45 am

Contact: Rene R. Salazar, PhD **Report Date:** 17-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested	*Lab Id:*	19318-001		19318-003		19318-004		19318-005	
	Field Id:	090608-RS-22		090608-RS-24		090608-RS-25		090608-RS-26	
	Depth:								
	Matrix:	AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		AMBIENT AIR	
	Sampled:	Jun-08-09 17:35		Jun-08-09 19:35		Jun-08-09 19:40		Jun-08-09 21:45	
Sulfur Compounds in Air By ASTM D5504-08	*Extracted:*								
	Analyzed:	Jun-09-09 15:52		Jun-09-09 16:21		Jun-09-09 16:35		Jun-09-09 20:13	
	Units/RL:	ppbv	PQL	ppbv	PQL	ppbv	PQL	ppbv	PQL
Hydrogen Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Carbonyl Sulfide		U	5.00	U	5.00	U	5.00	4.14 I	5.00
Methyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Carbon Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
Isopropyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
tert-Butyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
n-Propyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Methyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Isobutyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
n-Butyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
3-Methyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Tetrahydrothiophene		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2-Ethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2,5-Dimethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00

Certificate of Analysis Summary 19318

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-09-09 10:45 am

Contact: Rene R. Salazar, PhD **Report Date:** 17-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested										
	Lab Id:	19318-006		19318-007		19318-008		19318-009		
	Field Id:	090608-RS-27		090608-RS-28		090608-RS-29		090609-RS-30		
	Depth:									
	Matrix:	AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		
	Sampled:	Jun-08-09 21:50		Jun-08-09 23:45		Jun-08-09 23:50		Jun-09-09 01:35		
Sulfur Compounds in Air By ASTM D5504-08	***Extracted:***									
	Analyzed:	Jun-09-09 20:28		Jun-09-09 21:13		Jun-09-09 21:27		Jun-09-09 21:41		
	Units/RL:	ppbv	PQL	ppbv	PQL	ppbv	PQL	ppbv	PQL	
Hydrogen Sulfide		U	5.00	U	5.00	U	5.00	U	5.00	
Carbonyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00	
Methyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00	
Ethyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00	
Dimethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00	
Carbon Disulfide		U	5.00	U	5.00	U	5.00	U	5.00	
Isopropyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00	
tert-Butyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00	
n-Propyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00	
Ethyl Methyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00	
Thiophene		U	5.00	U	5.00	U	5.00	U	5.00	
Isobutyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00	
n-Butyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00	
Diethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00	
3-Methyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00	
Tetrahydrothiophene		U	5.00	U	5.00	U	5.00	U	5.00	
Dimethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00	
2-Ethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00	
Diethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00	
2,5-Dimethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00	

Certificate of Analysis Summary 19318

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-09-09 10:45 am

Contact: Rene R. Salazar, PhD **Report Date:** 17-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested	*Lab Id:*	19318-010		19318-011		19318-012		19318-013	
	Field Id:	090609-RS-31		090609-RS-32		090609-RS-33		090609-RS-34	
	Depth:								
	Matrix:	AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		AMBIENT AIR	
	Sampled:	Jun-09-09 01:40		Jun-09-09 03:35		Jun-09-09 04:00		Jun-09-09 05:30	
Sulfur Compounds in Air By ASTM D5504-08	*Extracted:*								
	Analyzed:	Jun-09-09 21:55		Jun-09-09 22:52		Jun-09-09 23:06		Jun-09-09 23:35	
	Units/RL:	ppbv	PQL	ppbv	PQL	ppbv	PQL	ppbv	PQL
Hydrogen Sulfide		U	5.00	U	5.00	7.14	5.00	U	5.00
Carbonyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Methyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Carbon Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
Isopropyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
tert-Butyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
n-Propyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Methyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Isobutyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
n-Butyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
3-Methyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Tetrahydrothiophene		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2-Ethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2,5-Dimethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00

Certificate of Analysis Summary 19318

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-09-09 10:45 am

Contact: Rene R. Salazar, PhD **Report Date:** 17-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested	***Lab Id:***	19318-014		19318-015		19318-016		19318-017	
	Field Id:	090609-RS-35		090609-RS-36		090609-RS-37		090609-RS-38	
	Depth:								
	Matrix:	AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		AMBIENT AIR	
	Sampled:	Jun-09-09 05:30		Jun-09-09 07:35		Jun-09-09 07:35		Jun-09-09 09:35	
Sulfur Compounds in Air By ASTM D5504-08	***Extracted:***								
	Analyzed:	Jun-09-09 23:49		Jun-10-09 00:03		Jun-10-09 00:18		Jun-10-09 00:32	
	Units/RL:	ppbv	PQL	ppbv	PQL	ppbv	PQL	ppbv	PQL
Hydrogen Sulfide		U	5.00	U	5.00	6.09	5.00	5.72	5.00
Carbonyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Methyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Carbon Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
Isopropyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
tert-Butyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
n-Propyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Methyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Isobutyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
n-Butyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
3-Methyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Tetrahydrothiophene		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2-Ethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2,5-Dimethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00

Certificate of Analysis Summary 19318

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-09-09 10:45 am

Contact: Rene R. Salazar, PhD **Report Date:** 17-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested							
	Lab Id:	19318-018		19318-019			
	Field Id:	090609-RS-39		090609-RS-40			
	Depth:						
	Matrix:	AMBIENT AIR		AMBIENT AIR			
	Sampled:	Jun-09-09 09:35		Jun-09-09 10:45			
Sulfur Compounds in Air By ASTM D5504-08	***Extracted:***						
	Analyzed:	Jun-10-09 00:46		Jun-10-09 01:01			
	Units/RL:	ppbv	PQL	ppbv	PQL		
Hydrogen Sulfide		U	5.00	U	5.00		
Carbonyl Sulfide		U	5.00	U	5.00		
Methyl Mercaptan		U	5.00	U	5.00		
Ethyl Mercaptan		U	5.00	U	5.00		
Dimethyl Sulfide		U	5.00	U	5.00		
Carbon Disulfide		U	5.00	U	5.00		
Isopropyl Mercaptan		U	7.00	U	7.00		
tert-Butyl Mercaptan		U	7.00	U	7.00		
n-Propyl Mercaptan		U	5.00	U	5.00		
Ethyl Methyl Sulfide		U	5.00	U	5.00		
Thiophene		U	5.00	U	5.00		
Isobutyl Mercaptan		U	5.00	U	5.00		
n-Butyl Mercaptan		U	5.00	U	5.00		
Diethyl Sulfide		U	5.00	U	5.00		
3-Methyl Thiophene		U	5.00	U	5.00		
Tetrahydrothiophene		U	5.00	U	5.00		
Dimethyl Disulfide		U	5.00	U	5.00		
2-Ethyl Thiophene		U	5.00	U	5.00		
Diethyl Disulfide		U	5.00	U	5.00		
2,5-Dimethyl Thiophene		U	5.00	U	5.00		

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-22**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-001**	Date Collected: **Jun-08-09 17:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 15:52 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-24**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-003**	Date Collected: **Jun-08-09 19:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 16:21 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-25**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-004**	Date Collected: **Jun-08-09 19:40**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 16:35 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-26**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-005**	Date Collected: **Jun-08-09 21:45**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 20:13 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	4.14 I	5.00	3.96	ppbv	I	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-27**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-006**	Date Collected: **Jun-08-09 21:50**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 20:28 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-28**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-007**	Date Collected: **Jun-08-09 23:45**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 21:13 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-29**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-008**	Date Collected: **Jun-08-09 23:50**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 21:27 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-30**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-009**	Date Collected: **Jun-09-09 01:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 21:41 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-31**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-010**	Date Collected: **Jun-09-09 01:40**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 21:55 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-32**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-011**	Date Collected: **Jun-09-09 03:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 22:52 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-33**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-012**	Date Collected: **Jun-09-09 04:00**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 23:06 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	7.14	5.00	3.35	ppbv		1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-34**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-013**	Date Collected: **Jun-09-09 05:30**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 23:35 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-35**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-014**	Date Collected: **Jun-09-09 05:30**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 23:49 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-36**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-015**	Date Collected: **Jun-09-09 07:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 00:03 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-37**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-016**	Date Collected: **Jun-09-09 07:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 00:18 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	6.09	5.00	3.35	ppbv		1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-38**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-017**	Date Collected: **Jun-09-09 09:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 00:32 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	5.72	5.00	3.35	ppbv		1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-39**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-018**	Date Collected: **Jun-09-09 09:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 00:46 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-40**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19318-019**	Date Collected: **Jun-09-09 10:45**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 01:01 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **3930367 D**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 22:30**
Lab Sample Id: **19303-001 D**	Date Collected: **Jun-08-09 20:54**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 17:48 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv		1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv		1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv		1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv		1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv		1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv		1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv		1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv		1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv		1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv		1
Thiophene	110-02-1	U	5.00	3.50	ppbv		1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv		1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv		1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv		1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv		1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv		1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv		1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv		1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv		1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **3930367 S**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 22:30**
Lab Sample Id: **19303-001 S**	Date Collected: **Jun-08-09 20:54**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 17:04 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	95	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	88	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	82	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	73	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	82	5.00	3.41	%		1
Carbon Disulfide	75-15-0	77	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	72	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	70	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	81	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	73	5.00	3.36	%		1
Thiophene	110-02-1	62	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	77	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	76	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	66	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	70	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	65	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	68	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	76	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	63	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	70	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **3930367 SD**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 22:30**
Lab Sample Id: **19303-001 SD**	Date Collected: **Jun-08-09 20:54**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 17:19 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	99	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	82	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	74	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	74	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	76	5.00	3.41	%		1
Carbon Disulfide	75-15-0	80	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	86	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	85	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	68	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	70	5.00	3.36	%		1
Thiophene	110-02-1	79	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	92	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	86	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	104	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	75	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	79	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	74	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	78	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	60	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	74	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-13 D**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19319-009 D**	Date Collected: **Jun-09-09 10:30**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 02:41 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv		1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv		1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv		1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv		1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv		1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv		1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv		1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv		1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv		1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv		1
Thiophene	110-02-1	U	5.00	3.50	ppbv		1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv		1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv		1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv		1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv		1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv		1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv		1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv		1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv		1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-13 S**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19319-009 S**	Date Collected: **Jun-09-09 10:30**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 01:44 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	100	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	84	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	87	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	68	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	92	5.00	3.41	%		1
Carbon Disulfide	75-15-0	89	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	98	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	88	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	94	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	98	5.00	3.36	%		1
Thiophene	110-02-1	70	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	81	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	84	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	74	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	91	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	64	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	84	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	85	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	69	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	84	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090609-RS-13 SD**	Matrix: **AMBIENT AIR**	Date Received: **Jun-09-09 10:45**
Lab Sample Id: **19319-009 SD**	Date Collected: **Jun-09-09 10:30**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 02:12 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	89	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	78	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	97	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	108	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	85	5.00	3.41	%		1
Carbon Disulfide	75-15-0	91	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	104	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	92	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	93	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	90	5.00	3.36	%		1
Thiophene	110-02-1	80	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	98	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	89	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	90	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	82	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	72	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	93	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	88	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	72	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	77	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67413-1-BKS**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67413-1-BKS**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 15:37 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	98	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	98	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	90	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	78	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	91	5.00	3.41	%		1
Carbon Disulfide	75-15-0	100	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	94	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	82	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	94	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	87	5.00	3.36	%		1
Thiophene	110-02-1	94	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	93	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	91	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	81	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	102	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	96	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	99	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	99	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	90	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	94	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67413-1-BLK**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67413-1-BLK**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 15:23 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67413-1-BSD**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67413-1-BSD**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 18:03 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67413

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	103	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	105	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	94	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	93	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	100	5.00	3.41	%		1
Carbon Disulfide	75-15-0	99	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	96	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	102	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	92	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	92	5.00	3.36	%		1
Thiophene	110-02-1	95	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	110	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	102	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	118	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	108	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	91	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	96	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	100	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	94	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	96	5.00	3.62	%		1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67414-1-BKS**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67414-1-BKS**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 01:58 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	108	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	113	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	98	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	96	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	115	5.00	3.41	%		1
Carbon Disulfide	75-15-0	104	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	81	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	105	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	81	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	110	5.00	3.36	%		1
Thiophene	110-02-1	98	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	108	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	100	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	102	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	100	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	89	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	96	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	104	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	92	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	100	5.00	3.62	%		1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67414-1-BLK**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67414-1-BLK**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 15:23 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19318

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67414-1-BSD**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67414-1-BSD**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-10-09 03:10 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67414

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	95	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	108	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	96	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	88	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	110	5.00	3.41	%		1
Carbon Disulfide	75-15-0	103	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	102	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	106	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	86	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	110	5.00	3.36	%		1
Thiophene	110-02-1	88	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	90	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	104	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	85	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	100	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	94	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	88	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	97	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	92	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	89	5.00	3.62	%		1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Quality Control Sample Legend

Lakeland Labs Quality Control Sample Legend

This analytical report may include results for various quality assurance/quality control (QA/QC) samples prepared and analyzed as required within various sample preparation and analytical batches. In-house sample identification is based on the Lakeland Labs Work Order No. followed by the Work Order Item No. For example, the second item on Work Order No. 10000 would be assigned Lab Sample ID 10000-002. The QA/QC sample identifications are affixed with suffixes to differentiate them from the actual sample results. For QA/QC samples generated in-house such as method blanks, blank spikes, blank spike duplicates, etc., the preparation or analytical batch number is used instead of the Work Order No. To assist the data reviewer, the following legend provides information on the various QA/QC samples and the suffixes used to denote them:

- BLK Method Blank. A method blank, also known as a laboratory control blank (LCB), is a sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

- BKS Blank Spike. A blank spike, also known as a calibration verification or laboratory control sample (LCS), is a sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes. It is generally used to establish intra-laboratory or analyst-specific precision and bias (accuracy) or to assess the performance of all or a portion of the measurement system. Successful analysis of the blank spike sample demonstrates an analytical system's ability to accurately measure target analyte concentrations.

- BSD Blank Spike Duplicate. A blank spike duplicate, also known as a laboratory control sample duplicate (LCSD), is a second blank spike sample, often bracketing a group of samples within a batch. Successful analysis of the blank spike duplicate sample demonstrates not only an analytical system's continuing ability to accurately measure target analyte concentrations, but also, when compared with the blank spike results, the system's precision.

- S Matrix Spike (MS). A matrix spike is a sample prepared by adding a known mass of target analyte(s) to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

- SD Matrix Spike Duplicate (MSD). A matrix spike duplicate is a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

- D Matrix Duplicate (MD). A matrix duplicate is a second replicate matrix prepared in the laboratory and analyzed to obtain a measure of precision.

- MRL Method Reporting Limit. A method reporting limit standard is an analyte-free matrix similar to the sample matrices spiked with one or more of the target analytes at a concentration equal to or less than the method reporting limit (also known as the practical quantitation limit or PQL). Successful analysis of the MRL standard demonstrates the analytical system's ability to identify the spiked analytes of interest at the MRL/PQL.

FLORIDA Flagging Criteria

Data were reviewed by the Department Supervisor and QA Director

A Value reported is the mean (average) of two or more determinations. This code shall be used if the reported value is the average of results for two or more discrete and separate samples. These samples shall have been processed and analyzed independently. Do not use this code if the data are the result of replicate analysis on the same sample aliquot, extract or digestate.

B Results based upon colony counts outside the acceptable range. This code applies to microbiological tests and specifically to membrane filter colony counts. The code is to be used if the colony count is generated from a plate in which the total number of coliform colonies is outside the method indicated ideal range. This code is not to be used if a 100 mL sample has been filtered and the colony count is less than the lower value of the ideal range.

J Estimated value. A "J" value shall be accompanied by a narrative justification for its use. Where possible, the organization shall report whether the actual value is less than or greater than the reported value. A "J" value shall not be used as a substitute for K, L, M, T, V, or Y, however, if additional reasons exist for identifying the value as estimate (e.g., matrix spiked failed to meet acceptance criteria), the "J" code may be added to a K, L, M, T, V, or Y. The following are some examples of narrative descriptions that may accompany a "J" code: .

J1: No known quality control criteria exist for the component;

J2: The reported value failed to meet the established quality control criteria for either precision or accuracy (the specific failure must be identified);

J3: The sample matrix interfered with the ability to make any accurate determination;

J4: The data are questionable because of improper laboratory or field protocols

Q Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.

T Value reported is less than the laboratory method detection limit. The value is reported for informational purposes, only and shall not be used in statistical analysis.

U Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported (see "T" above).

V Indicates that the analyte was detected in both the sample and the associated method blank. Note: the value in the blank shall not be subtracted from associated samples.

Y The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

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FLORIDA Flagging Criteria

*	Not analyzed due to interference
R	Significant rain in the past 48 hours. (Significant rain typically involves rain in excess of 1/2 inch within the past 48 hours.) This code shall be used when the rainfall might contribute to a lower than normal value.
!	Data deviate from historically established concentration ranges.
+	Analyte falls outside current scope of NELAP accreditation.
X	In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
D	The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
F	When reporting species: F indicates the female sex. Otherwise it indicates RPD value is outside the acceptable range.
L	Off-scale high. Actual value is known to be greater than value given. To be used when the concentration of the analyte is above the acceptable level for quantitation (exceeds the linear range or highest calibration standard) and the calibration curve is known to exhibit a negative deflection.
H	Value based on field kit determination; results may not be accurate. This code shall be used if a field screening test (i.e., field gas chromatograph data, immunoassay, vendor-supplied field kit, etc.) was used to generate the value and the field kit or method has not been recognized by the Department as equivalent to laboratory methods.

LAKELAND LABORATORIES

BS / BSD Recoveries

Project Name: FDOH - Chinese Wallboard

Report Date 17-JUN-09

Work Order #: 19318

Project ID: 1406.01

Analyst: GARGAR

Date Prepared: 06/09/2009

Date Analyzed: 06/09/2009

Lab Batch ID: 67413

Sample: 67413-1-BKS

Batch #: 1

Matrix: Air

Units: ppbv

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	25.0	24.4	98	25.0	25.7	103	5	70-130	30	
Carbonyl Sulfide	<3.96	25.0	24.4	98	25.0	26.2	105	7	70-130	30	
Methyl Mercaptan	<4.65	25.0	22.5	90	25.0	23.6	94	5	70-130	30	
Ethyl Mercaptan	<4.59	25.0	19.6	78	25.0	23.2	93	17	70-130	30	
Dimethyl Sulfide	<3.41	25.0	22.7	91	25.0	24.9	100	9	70-130	30	
Carbon Disulfide	<1.29	25.0	24.9	100	25.0	24.8	99	0	70-130	30	
Isopropyl Mercaptan	<5.00	25.0	23.6	94	25.0	23.9	96	1	70-130	30	
tert-Butyl Mercaptan	<5.64	25.0	20.5	82	25.0	25.4	102	21	70-130	30	
n-Propyl Mercaptan	<4.36	25.0	23.6	94	25.0	23.0	92	3	70-130	30	
Ethyl Methyl Sulfide	<3.36	25.0	21.7	87	25.0	23.0	92	6	70-130	30	
Thiophene	<3.50	25.0	23.6	94	25.0	23.8	95	1	70-130	30	
Isobutyl Mercaptan	<4.00	25.0	23.2	93	25.0	27.6	110	17	70-130	30	
n-Butyl Mercaptan	<3.39	25.0	22.8	91	25.0	25.5	102	11	70-130	30	
Diethyl Sulfide	<4.29	25.0	20.2	81	25.0	29.5	118	37	70-130	30	JF
3-Methyl Thiophene	<2.70	25.0	25.4	102	25.0	26.9	108	6	70-130	30	
Tetrahydrothiophene	<2.07	25.0	24.0	96	25.0	22.7	91	6	70-130	30	
Dimethyl Disulfide	<3.25	25.0	24.8	99	25.0	24.0	96	3	70-130	30	
2-Ethyl Thiophene	<1.97	25.0	24.7	99	25.0	25.0	100	1	70-130	30	
Diethyl Disulfide	<1.26	25.0	22.4	90	25.0	23.6	94	5	70-130	30	
2,5-Dimethyl Thiophene	<3.62	25.0	23.4	94	25.0	24.1	96	3	70-130	30	

Relative Percent Difference RPD = 200*|(D-F)/(D+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

LAKELAND LABORATORIES

BS / BSD Recoveries

Project Name: FDOH - Chinese Wallboard

Report Date 17-JUN-09

Work Order #: 19318

Project ID: 1406.01

Analyst: GARGAR

Date Prepared: 06/10/2009

Date Analyzed: 06/10/2009

Lab Batch ID: 67414

Sample: 67414-1-BKS

Batch #: 1

Matrix: Air

Units: ppbv

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	25.0	27.0	108	25.0	23.8	95	13	70-130	30	
Carbonyl Sulfide	<3.96	25.0	28.2	113	25.0	27.0	108	4	70-130	30	
Methyl Mercaptan	<4.65	25.0	24.5	98	25.0	24.0	96	2	70-130	30	
Ethyl Mercaptan	<4.59	25.0	24.1	96	25.0	21.9	88	10	70-130	30	
Dimethyl Sulfide	<3.41	25.0	28.8	115	25.0	27.6	110	4	70-130	30	
Carbon Disulfide	<1.29	25.0	26.1	104	25.0	25.8	103	1	70-130	30	
Isopropyl Mercaptan	<5.00	25.0	20.2	81	25.0	25.5	102	23	70-130	30	
tert-Butyl Mercaptan	<5.64	25.0	26.3	105	25.0	26.5	106	1	70-130	30	
n-Propyl Mercaptan	<4.36	25.0	20.2	81	25.0	21.4	86	6	70-130	30	
Ethyl Methyl Sulfide	<3.36	25.0	27.4	110	25.0	27.5	110	0	70-130	30	
Thiophene	<3.50	25.0	24.4	98	25.0	22.1	88	10	70-130	30	
Isobutyl Mercaptan	<4.00	25.0	27.1	108	25.0	22.5	90	19	70-130	30	
n-Butyl Mercaptan	<3.39	25.0	25.1	100	25.0	26.1	104	4	70-130	30	
Diethyl Sulfide	<4.29	25.0	25.6	102	25.0	21.2	85	19	70-130	30	
3-Methyl Thiophene	<2.70	25.0	25.1	100	25.0	25.0	100	0	70-130	30	
Tetrahydrothiophene	<2.07	25.0	22.2	89	25.0	23.4	94	5	70-130	30	
Dimethyl Disulfide	<3.25	25.0	23.9	96	25.0	21.9	88	9	70-130	30	
2-Ethyl Thiophene	<1.97	25.0	25.9	104	25.0	24.2	97	7	70-130	30	
Diethyl Disulfide	<1.26	25.0	23.1	92	25.0	23.0	92	0	70-130	30	
2,5-Dimethyl Thiophene	<3.62	25.0	24.9	100	25.0	22.2	89	11	70-130	30	

Relative Percent Difference RPD = 200*|(D-F)/(D+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: FDOH - Chinese Wallboard

Report Date: 17-JUN-09

Work Order # : 19318

Project ID: 1406.01

Lab Batch ID: 67413 **QC- Sample ID:** 19303-001 S **Batch #:** 1 **Matrix:** Ambient Air

Date Analyzed: 06/09/2009 **Date Prepared:** 06/09/2009 **Analyst:** GARGAR

Reporting Units: ppbv

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	25.0	23.7	95	25.0	24.8	99	4	70-130	30	
Carbonyl Sulfide	<3.96	25.0	22.0	88	25.0	20.4	82	7	70-130	30	
Methyl Mercaptan	<4.65	25.0	20.4	82	25.0	18.4	74	10	70-130	30	
Ethyl Mercaptan	<4.59	25.0	18.3	73	25.0	18.5	74	1	70-130	30	
Dimethyl Sulfide	<3.41	25.0	20.5	82	25.0	18.9	76	8	70-130	30	
Carbon Disulfide	<1.29	25.0	19.2	77	25.0	19.9	80	4	70-130	30	
Isopropyl Mercaptan	<5.00	25.0	18.0	72	25.0	21.4	86	18	70-130	30	
tert-Butyl Mercaptan	<5.64	25.0	17.5	70	25.0	21.2	85	19	70-130	30	
n-Propyl Mercaptan	<4.36	25.0	20.2	81	25.0	17.0	68	17	70-130	30	J
Ethyl Methyl Sulfide	<3.36	25.0	18.2	73	25.0	17.4	70	4	70-130	30	
Thiophene	<3.50	25.0	15.4	62	25.0	19.8	79	24	70-130	30	J
Isobutyl Mercaptan	<4.00	25.0	19.2	77	25.0	22.9	92	18	70-130	30	
n-Butyl Mercaptan	<3.39	25.0	19.1	76	25.0	21.4	86	12	70-130	30	
Diethyl Sulfide	<4.29	25.0	16.6	66	25.0	26.1	104	45	70-130	30	JF
3-Methyl Thiophene	<2.70	25.0	17.6	70	25.0	18.7	75	7	70-130	30	
Tetrahydrothiophene	<2.07	25.0	16.2	65	25.0	19.8	79	19	70-130	30	J
Dimethyl Disulfide	<3.25	25.0	16.9	68	25.0	18.4	74	8	70-130	30	J
2-Ethyl Thiophene	<1.97	25.0	18.9	76	25.0	19.4	78	3	70-130	30	
Diethyl Disulfide	<1.26	25.0	15.7	63	25.0	15.1	60	5	70-130	30	J
2,5-Dimethyl Thiophene	<3.62	25.0	17.6	70	25.0	18.4	74	6	70-130	30	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*(D-G)/(D+G)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Form 3 - MS / MSD Recoveries

Project Name: FDOH - Chinese Wallboard

Report Date: 17-JUN-09

Work Order # : 19318

Project ID: 1406.01

Lab Batch ID: 67414 **QC- Sample ID:** 19319-009 S **Batch #:** 1 **Matrix:** Ambient Air

Date Analyzed: 06/10/2009 **Date Prepared:** 06/10/2009 **Analyst:** GARGAR

Reporting Units: ppbv

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	25.0	24.9	100	25.0	22.2	89	12	70-130	30	
Carbonyl Sulfide	<3.96	25.0	21.0	84	25.0	19.4	78	7	70-130	30	
Methyl Mercaptan	<4.65	25.0	21.8	87	25.0	24.3	97	11	70-130	30	
Ethyl Mercaptan	<4.59	25.0	16.9	68	25.0	27.0	108	45	70-130	30	JF
Dimethyl Sulfide	<3.41	25.0	23.1	92	25.0	21.3	85	8	70-130	30	
Carbon Disulfide	<1.29	25.0	22.3	89	25.0	22.7	91	2	70-130	30	
Isopropyl Mercaptan	<5.00	25.0	24.4	98	25.0	25.9	104	6	70-130	30	
tert-Butyl Mercaptan	<5.64	25.0	21.9	88	25.0	22.9	92	4	70-130	30	
n-Propyl Mercaptan	<4.36	25.0	23.5	94	25.0	23.3	93	1	70-130	30	
Ethyl Methyl Sulfide	<3.36	25.0	24.4	98	25.0	22.5	90	9	70-130	30	
Thiophene	<3.50	25.0	17.4	70	25.0	20.0	80	13	70-130	30	
Isobutyl Mercaptan	<4.00	25.0	20.3	81	25.0	24.4	98	19	70-130	30	
n-Butyl Mercaptan	<3.39	25.0	21.1	84	25.0	22.2	89	6	70-130	30	
Diethyl Sulfide	<4.29	25.0	18.5	74	25.0	22.5	90	20	70-130	30	
3-Methyl Thiophene	<2.70	25.0	22.8	91	25.0	20.6	82	10	70-130	30	
Tetrahydrothiophene	<2.07	25.0	16.0	64	25.0	18.1	72	12	70-130	30	J
Dimethyl Disulfide	<3.25	25.0	21.0	84	25.0	23.3	93	10	70-130	30	
2-Ethyl Thiophene	<1.97	25.0	21.2	85	25.0	21.9	88	3	70-130	30	
Diethyl Disulfide	<1.26	25.0	17.3	69	25.0	17.9	72	4	70-130	30	J
2,5-Dimethyl Thiophene	<3.62	25.0	20.9	84	25.0	19.3	77	9	70-130	30	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*(D-G)/(D+G)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Sample Duplicate Recovery

LAKELAND LABORATORIES

Project Name: FDOH - Chinese Wallboard

Work Order #: 19318 **Report Date:** 17-JUN-09

Lab Batch #: 67413 **Project ID:** 1406.01

Date Analyzed: 06/09/2009 **Date Prepared:** 06/09/2009 **Analyst:** GARGAR

QC- Sample ID: 19303-001 D **Batch #:** 1 **Matrix:** Air

Reporting Units: ppbv

Sulfur Compounds in Air By ASTM D5504-08	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	<3.35	NC	30	
Carbonyl Sulfide	<3.96	<3.96	NC	30	
Methyl Mercaptan	<4.65	<4.65	NC	30	
Ethyl Mercaptan	<4.59	<4.59	NC	30	
Dimethyl Sulfide	<3.41	<3.41	NC	30	
Carbon Disulfide	<1.29	<1.29	NC	30	
Isopropyl Mercaptan	<5.00	<5.00	NC	30	
tert-Butyl Mercaptan	<5.64	<5.64	NC	30	
n-Propyl Mercaptan	<4.36	<4.36	NC	30	
Ethyl Methyl Sulfide	<3.36	<3.36	NC	30	
Thiophene	<3.50	<3.50	NC	30	
Isobutyl Mercaptan	<4.00	<4.00	NC	30	
n-Butyl Mercaptan	<3.39	<3.39	NC	30	
Diethyl Sulfide	<4.29	<4.29	NC	30	
3-Methyl Thiophene	<2.70	<2.70	NC	30	
Tetrahydrothiophene	<2.07	<2.07	NC	30	
Dimethyl Disulfide	<3.25	<3.25	NC	30	
2-Ethyl Thiophene	<1.97	<1.97	NC	30	
Diethyl Disulfide	<1.26	<1.26	NC	30	
2,5-Dimethyl Thiophene	<3.62	<3.62	NC	30	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

Sample Duplicate Recovery

LAKELAND LABORATORIES

Project Name: FDOH - Chinese Wallboard

Work Order #: 19318 **Report Date:** 17-JUN-09

Lab Batch #: 67414 **Project ID:** 1406.01

Date Analyzed: 06/10/2009 **Date Prepared:** 06/10/2009 **Analyst:** GARGAR

QC- Sample ID: 19319-009 D **Batch #:** 1 **Matrix:** Air

Reporting Units: ppbv

Sulfur Compounds in Air By ASTM D5504-08	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	<3.35	NC	30	
Carbonyl Sulfide	<3.96	<3.96	NC	30	
Methyl Mercaptan	<4.65	<4.65	NC	30	
Ethyl Mercaptan	<4.59	<4.59	NC	30	
Dimethyl Sulfide	<3.41	<3.41	NC	30	
Carbon Disulfide	<1.29	<1.29	NC	30	
Isopropyl Mercaptan	<5.00	<5.00	NC	30	
tert-Butyl Mercaptan	<5.64	<5.64	NC	30	
n-Propyl Mercaptan	<4.36	<4.36	NC	30	
Ethyl Methyl Sulfide	<3.36	<3.36	NC	30	
Thiophene	<3.50	<3.50	NC	30	
Isobutyl Mercaptan	<4.00	<4.00	NC	30	
n-Butyl Mercaptan	<3.39	<3.39	NC	30	
Diethyl Sulfide	<4.29	<4.29	NC	30	
3-Methyl Thiophene	<2.70	<2.70	NC	30	
Tetrahydrothiophene	<2.07	<2.07	NC	30	
Dimethyl Disulfide	<3.25	<3.25	NC	30	
2-Ethyl Thiophene	<1.97	<1.97	NC	30	
Diethyl Disulfide	<1.26	<1.26	NC	30	
2,5-Dimethyl Thiophene	<3.62	<3.62	NC	30	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

Instrument QC Recovery

Project Name: FDOH - Chinese Wallboard

Report Date: 17-JUN-09

Work Order #: 19318

Project ID: 1406.01

Sample: 67413-1-MRL

Lab Batch #: 67413

Date Analyzed: 06/10/2009

Analyst: GARGAR

Reporting Units: ppbv

Instrument QC RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Result [A]	Spike Added [B]	Spike %R [C]	Control Limits %R	Flags
Hydrogen Sulfide	6.93	5.00	139	50-200	
Carbonyl Sulfide	8.04	5.00	161	50-200	
Methyl Mercaptan	7.37	5.00	147	50-200	
Ethyl Mercaptan	12.4	5.00	248	50-200	J
Dimethyl Sulfide	6.00	5.00	120	50-200	
Carbon Disulfide	7.36	5.00	147	50-200	
Isopropyl Mercaptan	16.7	5.00	334	50-200	J
tert-Butyl Mercaptan	7.83	5.00	157	50-200	
n-Propyl Mercaptan	9.70	5.00	194	50-200	
Ethyl Methyl Sulfide	6.76	5.00	135	50-200	
Thiophene	8.13	5.00	163	50-200	
Isobutyl Mercaptan	11.0	5.00	220	50-200	J
n-Butyl Mercaptan	7.40	5.00	148	50-200	
Diethyl Sulfide	8.32	5.00	166	50-200	
3-Methyl Thiophene	8.14	5.00	163	50-200	
Tetrahydrothiophene	6.19	5.00	124	50-200	
Dimethyl Disulfide	12.6	5.00	252	50-200	J
2-Ethyl Thiophene	5.90	5.00	118	50-200	
Diethyl Disulfide	7.04	5.00	141	50-200	
2,5-Dimethyl Thiophene	6.37	5.00	127	50-200	

Recovery [C] = 100*[A]/[B]
All results are based on MDL and validated for QC purposes.

LL WORK ORDER 19318

SALAZAR CONSULTING GROUP, INC.

6607 Heatherton Court, Tampa, Florida 33617
(813) 980-1915 • FAX (813) 988-7486

CHAIN OF CUSTODY

Project [illegible] **Project No.** [illegible]

Location Parkland, FL **Date:** 6/9/09

Sampled by: R. Salazar / [illegible] / [illegible]

Unit 90

	SAMPLE NO.	LOCATION	TYPE	COMMENTS
5:35P	090608-RS-22	2ND FLOOR FR	Tedlar bag	Unit 90
5:40P	-23	OUTDOORS		
7:35P	-24	MASTER BDRM		
7:[illegible]P	-25	Outdoors		
9:45P	-26	2ND FL - FR		
9:50P	-27	Outdoors		
[illegible]	-28	Outdoors		
11:50P	-29	Master Bedroom		

Laboratory Instructions:

- *Please invoice Salazar Consulting Group, Inc.*
- *FAX preliminary results and mail final results.*
- *Other:* _____

CHAIN OF CUSTODY DATA:

Collected by: Salazar / [illegible] / [illegible] **Date:** 6/9/09

Packaged/Sent by: R. Salazar **Date:** 6/9/09

Transporter: [illegible] **Date:** 6/9/09

Laboratory: [illegible] Laboratories

Lab Receiver: [illegible] **Date:** 9. JUN. 2009 1045

Lab Analyst: _____ **Date:** _____

PLEASE RETURN THIS FORM WITH ANALYTICAL RESULTS

19318

Salazar Consulting Group, Inc.

Project [illegible]

Project No. [illegible]

Date [illegible]

Page 2 of 2

CHAIN OF CUSTODY

	SAMPLE NO.	LOCATION	TYPE	COMMENTS
[illegible]	[illegible]	[illegible]	[illegible]	Unit 90
[illegible]	-31	Outdoors		
[illegible]	-32	MBRM		
5:00A	-33	Outdoor		
5:30A	-34	2nd FL FR		
5:30A	-35	Outdoors		
7:35A	-36	MBRM		
7:35	-37	outdoors		
9:35A	-38	2nd FL FR		
9:35AM	-39	outdoors		
10:45AM	-40	Field Blank		

Analytical Report #: 19299

for

Salazar Consulting Group, Inc.

Project Manager: Rene R. Salazar, PhD

Project Name: FDOH - Chinese Wallboard

Project ID: 1406.01

Project Location: Units 90 & 91 **- Parkland, FL**

16-JUN-09

LAKELAND LABORATORIES

NELAP Certification Number: E84880

1910 Harden Boulevard, Suite 101
Lakeland, Florida 33803-1829
Phone: (863) 686-4271
Fax: (863) 686-4389

LAKELAND LABORATORIES

16-JUN-09

Rene R. Salazar, PhD
Salazar Consulting Group, Inc.
6607 Heatherton Court
Tampa, FL 33617

Reference: LAKELAND Work Order No: **19299**
FDOH - Chinese Wallboard
Project Location: Units 90 & 91 - Parkland, FL
Project Ref No: 1406.01
Lab Quote No:

Dear Rene R. Salazar, PhD :

The attached Analytical and QC Summaries list the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Lakeland Laboratories Work Order numbered **19299**.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies and QA/QC procedures. Lakeland Laboratories is limited in liability to the actual cost of the pertinent analysis done. Your samples will be retained by Lakeland Laboratories for a period of 30 days following receipt of the samples. After that time, they will be properly disposed of without further notice, unless there is a pre-arranged contractual arrangement. We reserve the right to return any unused samples, extracts or related solutions to you, if we consider it necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by Lakeland Laboratories. This report will be filed for at least 3 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you.

We thank you for selecting Lakeland Laboratories Incorporated to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Sincerely,

Mark A. Alessandroni, PE
Technical Director

1910 Harden Boulevard, Suite 101
Lakeland, Florida 33803-1829
Phone: (863) 686-4271
Fax: (863) 686-4389

CASE NARRATIVE

LAKELAND LABORATORIES

Client Name: Salazar Consulting Group, Inc.

Project Name: FDOH - Chinese Wallboard

Project ID:	*1406.01*	*Report Date:*	*16-JUN-09*
Work Order Number:	*19299*	*Date Received:*	*08-JUN-09*

Sample receipt non conformances and Comments:

Samples were retrieved from the field sampling representative by a lab representative at 5:00 PM on June 8, 2009 and transported directly to the laboratory. All samples were analyzed on June 8-9, 2009 within the mandated holding time of 24 hours. Unless noted elsewhere in the report, no deviations from the laboratory SOP were made.

Sample receipt Non Conformances and Comments per Sample:

None

Analytical Non Conformances and Comments:

Batch:	*LBA-67401*	*Sulfur Compounds in Air By ASTM D5504-08*
All recoveries were within acceptance limits for the blank spike (BKS-LCS) and the blank spike duplicate (BSD-LCSD). Two compounds, carbonyl sulfide and carbon disulfide, fell outside acceptance limits for percent recovery (accuracy) in the matrix spike-matrix spike duplicate (MS-MSD). One compound, dimethyl disulfide, fell outside acceptance limits for relative percent difference (precision) in the MS-MSD.		

Certificate of Analysis Summary 19299

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-08-09 05:00 pm

Contact: Rene R. Salazar, PhD **Report Date:** 16-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested	*Lab Id:*	19299-001		19299-002		19299-003		19299-004	
	Field Id:	090608-RS-15		090608-RS-16		090608-RS-17		090608-RS-18	
	Depth:								
	Matrix:	AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		AMBIENT AIR	
	Sampled:	Jun-08-09 11:30		Jun-08-09 11:35		Jun-08-09 13:35		Jun-08-09 13:35	
Sulfur Compounds in Air By ASTM D5504-08	*Extracted:*								
	Analyzed:	Jun-08-09 22:23		Jun-08-09 22:37		Jun-08-09 22:51		Jun-08-09 23:05	
	Units/RL:	ppbv	PQL	ppbv	PQL	ppbv	PQL	ppbv	PQL
Hydrogen Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Carbonyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Methyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Carbon Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
Isopropyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
tert-Butyl Mercaptan		U	7.00	U	7.00	U	7.00	U	7.00
n-Propyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Ethyl Methyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Isobutyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
n-Butyl Mercaptan		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Sulfide		U	5.00	U	5.00	U	5.00	U	5.00
3-Methyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Tetrahydrothiophene		U	5.00	U	5.00	U	5.00	U	5.00
Dimethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2-Ethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00
Diethyl Disulfide		U	5.00	U	5.00	U	5.00	U	5.00
2,5-Dimethyl Thiophene		U	5.00	U	5.00	U	5.00	U	5.00

Certificate of Analysis Summary 19299

Salazar Consulting Group, Inc., Tampa, FL

Project Name: FDOH - Chinese Wallboard

Project Id: 1406.01 **Date Received in Lab:** Jun-08-09 05:00 pm

Contact: Rene R. Salazar, PhD **Report Date:** 16-JUN-09

Project Location: Units 90 & 91 Parkland, FL **Project Manager:** Mark A. Alessandroni, PE

Analysis Requested	***Lab Id:***	19299-005		19299-006		19299-007		
	Field Id:	090608-RS-19		090608-RS-20		090608-RS-21		
	Depth:							
	Matrix:	AMBIENT AIR		AMBIENT AIR		AMBIENT AIR		
	Sampled:	Jun-08-09 15:35		Jun-08-09 15:35		Jun-08-09 15:35		
Sulfur Compounds in Air By ASTM D5504-08	***Extracted:***							
	Analyzed:	Jun-08-09 23:20		Jun-08-09 23:34		Jun-08-09 23:48		
	Units/RL:	ppbv	PQL	ppbv	PQL	ppbv	PQL	
Hydrogen Sulfide		U	5.00	U	5.00	U	5.00	
Carbonyl Sulfide		U	5.00	U	5.00	160 D	50.0	
Methyl Mercaptan		U	5.00	U	5.00	U	5.00	
Ethyl Mercaptan		U	5.00	U	5.00	U	5.00	
Dimethyl Sulfide		U	5.00	U	5.00	U	5.00	
Carbon Disulfide		U	5.00	U	5.00	4.90 I	5.00	
Isopropyl Mercaptan		U	7.00	U	7.00	U	7.00	
tert-Butyl Mercaptan		U	7.00	U	7.00	U	7.00	
n-Propyl Mercaptan		U	5.00	U	5.00	U	5.00	
Ethyl Methyl Sulfide		U	5.00	U	5.00	U	5.00	
Thiophene		U	5.00	U	5.00	U	5.00	
Isobutyl Mercaptan		U	5.00	U	5.00	U	5.00	
n-Butyl Mercaptan		U	5.00	U	5.00	U	5.00	
Diethyl Sulfide		U	5.00	U	5.00	U	5.00	
3-Methyl Thiophene		U	5.00	U	5.00	U	5.00	
Tetrahydrothiophene		U	5.00	U	5.00	U	5.00	
Dimethyl Disulfide		U	5.00	U	5.00	U	5.00	
2-Ethyl Thiophene		U	5.00	U	5.00	U	5.00	
Diethyl Disulfide		U	5.00	U	5.00	U	5.00	
2,5-Dimethyl Thiophene		U	5.00	U	5.00	U	5.00	

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-15**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-001**	Date Collected: **Jun-08-09 11:30**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 22:23 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-16**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-002**	Date Collected: **Jun-08-09 11:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 22:37 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-17**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-003**	Date Collected: **Jun-08-09 13:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 22:51 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-18**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-004**	Date Collected: **Jun-08-09 13:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 23:05 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-19**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-005**	Date Collected: **Jun-08-09 15:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 23:20 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-20**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-006**	Date Collected: **Jun-08-09 15:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 23:34 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **090608-RS-21**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 17:00**
Lab Sample Id: **19299-007**	Date Collected: **Jun-08-09 15:35**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 23:48 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	160 D	50.0	39.6	ppbv	D	10
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	4.90 I	5.00	1.29	ppbv	I	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **3930311 D**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 11:43**
Lab Sample Id: **19295-001 D**	Date Collected: **Jun-08-09 09:20**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 19:58 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv		1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv		1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv		1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv		1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv		1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv		1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv		1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv		1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv		1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv		1
Thiophene	110-02-1	U	5.00	3.50	ppbv		1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv		1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv		1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv		1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv		1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv		1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv		1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv		1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv		1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **3930311 S**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 11:43**
Lab Sample Id: **19295-001 S**	Date Collected: **Jun-08-09 09:20**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 19:15 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	96	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	185	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	90	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	86	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	87	5.00	3.41	%		1
Carbon Disulfide	75-15-0	137	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	76	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	94	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	102	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	92	5.00	3.36	%		1
Thiophene	110-02-1	96	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	106	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	95	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	80	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	87	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	91	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	111	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	87	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	85	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	95	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **3930311 SD**	Matrix: **AMBIENT AIR**	Date Received: **Jun-08-09 11:43**
Lab Sample Id: **19295-001 SD**	Date Collected: **Jun-08-09 09:20**	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 19:30 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	84	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	172	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	93	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	99	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	92	5.00	3.41	%		1
Carbon Disulfide	75-15-0	134	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	92	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	87	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	84	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	89	5.00	3.36	%		1
Thiophene	110-02-1	92	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	87	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	88	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	86	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	90	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	79	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	78	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	87	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	78	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	77	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67401-1-BKS**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67401-1-BKS**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 21:38 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	92	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	98	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	84	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	88	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	91	5.00	3.41	%		1
Carbon Disulfide	75-15-0	100	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	84	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	84	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	92	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	94	5.00	3.36	%		1
Thiophene	110-02-1	92	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	91	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	92	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	82	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	97	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	112	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	88	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	96	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	86	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	79	5.00	3.62	%		1

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Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67401-1-BLK**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67401-1-BLK**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-08-09 16:08 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	U	5.00	3.35	ppbv	U	1
Carbonyl Sulfide	463-58-1	U	5.00	3.96	ppbv	U	1
Methyl Mercaptan	74-93-1	U	5.00	4.65	ppbv	U	1
Ethyl Mercaptan	75-08-1	U	5.00	4.59	ppbv	U	1
Dimethyl Sulfide	75-18-3	U	5.00	3.41	ppbv	U	1
Carbon Disulfide	75-15-0	U	5.00	1.29	ppbv	U	1
Isopropyl Mercaptan	75-33-2	U	7.00	5.00	ppbv	U	1
tert-Butyl Mercaptan	75-66-1	U	7.00	5.64	ppbv	U	1
n-Propyl Mercaptan	107-03-9	U	5.00	4.36	ppbv	U	1
Ethyl Methyl Sulfide	624-89-5	U	5.00	3.36	ppbv	U	1
Thiophene	110-02-1	U	5.00	3.50	ppbv	U	1
Isobutyl Mercaptan	513-44-0	U	5.00	4.00	ppbv	U	1
n-Butyl Mercaptan	109-79-5	U	5.00	3.39	ppbv	U	1
Diethyl Sulfide	624-92-0	U	5.00	4.29	ppbv	U	1
3-Methyl Thiophene	616-44-4	U	5.00	2.70	ppbv	U	1
Tetrahydrothiophene	110-01-0	U	5.00	2.07	ppbv	U	1
Dimethyl Disulfide	624-92-0	U	5.00	3.25	ppbv	U	1
2-Ethyl Thiophene	872-55-9	U	5.00	1.97	ppbv	U	1
Diethyl Disulfide	110-81-6	U	5.00	1.26	ppbv	U	1
2,5-Dimethyl Thiophene	638-02-8	U	5.00	3.62	ppbv	U	1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Certificate of Analysis #: 19299

LAKELAND LABORATORIES

Salazar Consulting Group, Inc., Tampa, FL

FDOH - Chinese Wallboard

Sample Id: **67401-1-BSD**	Matrix: **AIR**	Date Received:
Lab Sample Id: **67401-1-BSD**	Date Collected:	% Moisture:
Sample Depth:		Basis: **Wet**

Analytical Method: Sulfur Compounds in Air By ASTM D5504-08 Prep Method:

Date Analyzed: Jun-09-09 00:17 Analyst: GARGAR Date Prep: Tech: GARGAR

Seq Number: 67401

Parameter	Cas Number	Result	PQL	MDL	Units	Flag	Dil
Hydrogen Sulfide	7783-06-4	99	5.00	3.35	%		1
Carbonyl Sulfide	463-58-1	100	5.00	3.96	%		1
Methyl Mercaptan	74-93-1	83	5.00	4.65	%		1
Ethyl Mercaptan	75-08-1	82	5.00	4.59	%		1
Dimethyl Sulfide	75-18-3	98	5.00	3.41	%		1
Carbon Disulfide	75-15-0	100	5.00	1.29	%		1
Isopropyl Mercaptan	75-33-2	78	7.00	5.00	%		1
tert-Butyl Mercaptan	75-66-1	89	7.00	5.64	%		1
n-Propyl Mercaptan	107-03-9	91	5.00	4.36	%		1
Ethyl Methyl Sulfide	624-89-5	85	5.00	3.36	%		1
Thiophene	110-02-1	94	5.00	3.50	%		1
Isobutyl Mercaptan	513-44-0	86	5.00	4.00	%		1
n-Butyl Mercaptan	109-79-5	103	5.00	3.39	%		1
Diethyl Sulfide	624-92-0	92	5.00	4.29	%		1
3-Methyl Thiophene	616-44-4	97	5.00	2.70	%		1
Tetrahydrothiophene	110-01-0	99	5.00	2.07	%		1
Dimethyl Disulfide	624-92-0	88	5.00	3.25	%		1
2-Ethyl Thiophene	872-55-9	95	5.00	1.97	%		1
Diethyl Disulfide	110-81-6	93	5.00	1.26	%		1
2,5-Dimethyl Thiophene	638-02-8	99	5.00	3.62	%		1

*

Results of liquid samples are reported on a wet-weight basis unless otherwise indicated. Results of solid samples are reported on a dry-weight basis unless otherwise indicated.

Quality Control Sample Legend

Lakeland Labs Quality Control Sample Legend

This analytical report may include results for various quality assurance/quality control (QA/QC) samples prepared and analyzed as required within various sample preparation and analytical batches. In-house sample identification is based on the Lakeland Labs Work Order No. followed by the Work Order Item No. For example, the second item on Work Order No. 10000 would be assigned Lab Sample ID 10000-002. The QA/QC sample identifications are affixed with suffixes to differentiate them from the actual sample results. For QA/QC samples generated in-house such as method blanks, blank spikes, blank spike duplicates, etc., the preparation or analytical batch number is used instead of the Work Order No. To assist the data reviewer, the following legend provides information on the various QA/QC samples and the suffixes used to denote them:

- BLK Method Blank. A method blank, also known as a laboratory control blank (LCB), is a sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses.

- BKS Blank Spike. A blank spike, also known as a calibration verification or laboratory control sample (LCS), is a sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes. It is generally used to establish intra-laboratory or analyst-specific precision and bias (accuracy) or to assess the performance of all or a portion of the measurement system. Successful analysis of the blank spike sample demonstrates an analytical system's ability to accurately measure target analyte concentrations.

- BSD Blank Spike Duplicate. A blank spike duplicate, also known as a laboratory control sample duplicate (LCSD), is a second blank spike sample, often bracketing a group of samples within a batch. Successful analysis of the blank spike duplicate sample demonstrates not only an analytical system's continuing ability to accurately measure target analyte concentrations, but also, when compared with the blank spike results, the system's precision.

- S Matrix Spike (MS). A matrix spike is a sample prepared by adding a known mass of target analyte(s) to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

- SD Matrix Spike Duplicate (MSD). A matrix spike duplicate is a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

- D Matrix Duplicate (MD). A matrix duplicate is a second replicate matrix prepared in the laboratory and analyzed to obtain a measure of precision.

- MRL Method Reporting Limit. A method reporting limit standard is an analyte-free matrix similar to the sample matrices spiked with one or more of the target analytes at a concentration equal to or less than the method reporting limit (also known as the practical quantitation limit or PQL). Successful analysis of the MRL standard demonstrates the analytical system's ability to identify the spiked analytes of interest at the MRL/PQL.

FLORIDA Flagging Criteria

Data were reviewed by the Department Supervisor and QA Director

A Value reported is the mean (average) of two or more determinations. This code shall be used if the reported value is the average of results for two or more discrete and separate samples. These samples shall have been processed and analyzed independently. Do not use this code if the data are the result of replicate analysis on the same sample aliquot, extract or digestate.

B Results based upon colony counts outside the acceptable range. This code applies to microbiological tests and specifically to membrane filter colony counts. The code is to be used if the colony count is generated from a plate in which the total number of coliform colonies is outside the method indicated ideal range. This code is not to be used if a 100 mL sample has been filtered and the colony count is less than the lower value of the ideal range.

J Estimated value. A "J" value shall be accompanied by a narrative justification for its use. Where possible, the organization shall report whether the actual value is less than or greater than the reported value. A "J" value shall not be used as a substitute for K, L, M, T, V, or Y, however, if additional reasons exist for identifying the value as estimate (e.g., matrix spiked failed to meet acceptance criteria), the "J" code may be added to a K, L, M, T, V, or Y. The following are some examples of narrative descriptions that may accompany a "J" code: .

J1: No known quality control criteria exist for the component;

J2: The reported value failed to meet the established quality control criteria for either precision or accuracy (the specific failure must be identified);

J3: The sample matrix interfered with the ability to make any accurate determination;

J4: The data are questionable because of improper laboratory or field protocols

Q Sample held beyond the accepted holding time. This code shall be used if the value is derived from a sample that was prepared or analyzed after the approved holding time restrictions for sample preparation or analysis.

T Value reported is less than the laboratory method detection limit. The value is reported for informational purposes, only and shall not be used in statistical analysis.

U Indicates that the compound was analyzed for but not detected. This symbolshall be used to indicate that the specified component was not detected. The value associated with the qualifier shall be the laboratory method detection limit. Unless requested by the client, less than the method detection limit values shall not be reported (see "T" above).

V Indicates that the analyte was detected in both the sample and the associated method blank. Note: the value in the blank shall not be subtracted from associated samples.

Y The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

.

FLORIDA Flagging Criteria

*	Not analyzed due to interference
R	Significant rain in the past 48 hours. (Significant rain typically involves rain in excess of 1/2 inch within the past 48 hours.) This code shall be used when the rainfall might contribute to a lower than normal value.
!	Data deviate from historically established concentration ranges.
+	Analyte falls outside current scope of NELAP accreditation.
X	In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
D	The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
F	When reporting species: F indicates the female sex. Otherwise it indicates RPD value is outside the acceptable range.
L	Off-scale high. Actual value is known to be greater than value given. To be used when the concentration of the analyte is above the acceptable level for quantitation (exceeds the linear range or highest calibration standard) and the calibration curve is known to exhibit a negative deflection.
H	Value based on field kit determination; results may not be accurate. This code shall be used if a field screening test (i.e., field gas chromatograph data, immunoassay, vendor-supplied field kit, etc.) was used to generate the value and the field kit or method has not been recognized by the Department as equivalent to laboratory methods.

LAKELAND LABORATORIES

BS / BSD Recoveries

Project Name: FDOH - Chinese Wallboard

Report Date 16-JUN-09

Work Order #: 19299

Project ID: 1406.01

Analyst: GARGAR

Date Prepared: 06/09/2009

Date Analyzed: 06/09/2009

Lab Batch ID: 67401

Sample: 67401-1-BKS

Batch #: 1

Matrix: Air

Units: ppbv

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	25.0	22.9	92	25.0	24.8	99	8	70-130	30	
Carbonyl Sulfide	<3.96	25.0	24.6	98	25.0	24.9	100	1	70-130	30	
Methyl Mercaptan	<4.65	25.0	20.9	84	25.0	20.7	83	1	70-130	30	
Ethyl Mercaptan	<4.59	25.0	21.9	88	25.0	20.6	82	6	70-130	30	
Dimethyl Sulfide	<3.41	25.0	22.8	91	25.0	24.4	98	7	70-130	30	
Carbon Disulfide	<1.29	25.0	25.0	100	25.0	25.0	100	0	70-130	30	
Isopropyl Mercaptan	<5.00	25.0	21.0	84	25.0	19.6	78	7	70-130	30	
tert-Butyl Mercaptan	<5.64	25.0	20.9	84	25.0	22.3	89	6	70-130	30	
n-Propyl Mercaptan	<4.36	25.0	22.9	92	25.0	22.8	91	0	70-130	30	
Ethyl Methyl Sulfide	<3.36	25.0	23.4	94	25.0	21.2	85	10	70-130	30	
Thiophene	<3.50	25.0	23.1	92	25.0	23.6	94	2	70-130	30	
Isobutyl Mercaptan	<4.00	25.0	22.7	91	25.0	21.6	86	5	70-130	30	
n-Butyl Mercaptan	<3.39	25.0	23.0	92	25.0	25.8	103	11	70-130	30	
Diethyl Sulfide	<4.29	25.0	20.4	82	25.0	23.1	92	12	70-130	30	
3-Methyl Thiophene	<2.70	25.0	24.2	97	25.0	24.3	97	0	70-130	30	
Tetrahydrothiophene	<2.07	25.0	28.0	112	25.0	24.8	99	12	70-130	30	
Dimethyl Disulfide	<3.25	25.0	22.0	88	25.0	22.1	88	0	70-130	30	
2-Ethyl Thiophene	<1.97	25.0	24.1	96	25.0	23.7	95	2	70-130	30	
Diethyl Disulfide	<1.26	25.0	21.4	86	25.0	23.3	93	9	70-130	30	
2,5-Dimethyl Thiophene	<3.62	25.0	19.8	79	25.0	24.7	99	22	70-130	30	

Relative Percent Difference RPD = 200*|(D-F)/(D+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: FDOH - Chinese Wallboard

Report Date: 16-JUN-09

Work Order # : 19299

Project ID: 1406.01

Lab Batch ID: 67401 **QC- Sample ID:** 19295-001 S **Batch #:** 1 **Matrix:** Ambient Air

Date Analyzed: 06/08/2009 **Date Prepared:** 06/08/2009 **Analyst:** GARGAR

Reporting Units: ppbv

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	25.0	23.9	96	25.0	21.1	84	13	70-130	30	
Carbonyl Sulfide	<3.96	25.0	46.2	185	25.0	43.0	172	7	70-130	30	J
Methyl Mercaptan	<4.65	25.0	22.5	90	25.0	23.2	93	3	70-130	30	
Ethyl Mercaptan	<4.59	25.0	21.6	86	25.0	24.8	99	14	70-130	30	
Dimethyl Sulfide	<3.41	25.0	21.8	87	25.0	23.0	92	6	70-130	30	
Carbon Disulfide	<1.29	25.0	34.2	137	25.0	33.4	134	2	70-130	30	J
Isopropyl Mercaptan	<5.00	25.0	19.0	76	25.0	23.0	92	19	70-130	30	
tert-Butyl Mercaptan	<5.64	25.0	23.5	94	25.0	21.7	87	8	70-130	30	
n-Propyl Mercaptan	<4.36	25.0	25.4	102	25.0	21.1	84	19	70-130	30	
Ethyl Methyl Sulfide	<3.36	25.0	23.0	92	25.0	22.2	89	3	70-130	30	
Thiophene	<3.50	25.0	24.1	96	25.0	22.9	92	4	70-130	30	
Isobutyl Mercaptan	<4.00	25.0	26.4	106	25.0	21.8	87	20	70-130	30	
n-Butyl Mercaptan	<3.39	25.0	23.7	95	25.0	22.0	88	8	70-130	30	
Diethyl Sulfide	<4.29	25.0	20.1	80	25.0	21.5	86	7	70-130	30	
3-Methyl Thiophene	<2.70	25.0	21.7	87	25.0	22.6	90	3	70-130	30	
Tetrahydrothiophene	<2.07	25.0	22.8	91	25.0	19.8	79	14	70-130	30	
Dimethyl Disulfide	<3.25	25.0	27.7	111	25.0	19.4	78	35	70-130	30	JF
2-Ethyl Thiophene	<1.97	25.0	21.7	87	25.0	21.7	87	0	70-130	30	
Diethyl Disulfide	<1.26	25.0	21.2	85	25.0	19.5	78	9	70-130	30	
2,5-Dimethyl Thiophene	<3.62	25.0	23.7	95	25.0	19.2	77	21	70-130	30	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*(D-G)/(D+G)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Sample Duplicate Recovery

LAKELAND LABORATORIES

Project Name: FDOH - Chinese Wallboard

Work Order #: 19299 **Report Date:** 16-JUN-09

Lab Batch #: 67401 **Project ID:** 1406.01

Date Analyzed: 06/08/2009 **Date Prepared:** 06/08/2009 **Analyst:** GARGAR

QC- Sample ID: 19295-001 D **Batch #:** 1 **Matrix:** Air

Reporting Units: ppbv

Sulfur Compounds in Air By ASTM D5504-08	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Hydrogen Sulfide	<3.35	<3.35	NC	30	
Carbonyl Sulfide	<3.96	<3.96	NC	30	
Methyl Mercaptan	<4.65	<4.65	NC	30	
Ethyl Mercaptan	<4.59	<4.59	NC	30	
Dimethyl Sulfide	<3.41	<3.41	NC	30	
Carbon Disulfide	<1.29	<1.29	NC	30	
Isopropyl Mercaptan	<5.00	<5.00	NC	30	
tert-Butyl Mercaptan	<5.64	<5.64	NC	30	
n-Propyl Mercaptan	<4.36	<4.36	NC	30	
Ethyl Methyl Sulfide	<3.36	<3.36	NC	30	
Thiophene	<3.50	<3.50	NC	30	
Isobutyl Mercaptan	<4.00	<4.00	NC	30	
n-Butyl Mercaptan	<3.39	<3.39	NC	30	
Diethyl Sulfide	<4.29	<4.29	NC	30	
3-Methyl Thiophene	<2.70	<2.70	NC	30	
Tetrahydrothiophene	<2.07	<2.07	NC	30	
Dimethyl Disulfide	<3.25	<3.25	NC	30	
2-Ethyl Thiophene	<1.97	<1.97	NC	30	
Diethyl Disulfide	<1.26	<1.26	NC	30	
2,5-Dimethyl Thiophene	<3.62	<3.62	NC	30	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

Instrument QC Recovery

Project Name: **FDOH - Chinese Wallboard**

Report Date: 16-JUN-09

Work Order #: 19299

Project ID: 1406.01

Sample: **67401-1-MRL**

Lab Batch #: 67401

Date Analyzed: 06/09/2009

Analyst: GARGAR

Reporting Units: ppbv

Instrument QC RECOVERY STUDY

Sulfur Compounds in Air By ASTM D5504-08 Analytes	Result [A]	Spike Added [B]	Spike %R [C]	Control Limits %R	Flags
Hydrogen Sulfide	6.77	5.00	135	50-200	
Carbonyl Sulfide	8.09	5.00	162	50-200	
Methyl Mercaptan	6.80	5.00	136	50-200	
Ethyl Mercaptan	1.74	5.00	35	50-200	J
Dimethyl Sulfide	3.38	5.00	68	50-200	
Carbon Disulfide	6.40	5.00	128	50-200	
Isopropyl Mercaptan	6.50	5.00	130	50-200	
tert-Butyl Mercaptan	7.48	5.00	150	50-200	
n-Propyl Mercaptan	7.08	5.00	142	50-200	
Ethyl Methyl Sulfide	8.12	5.00	162	50-200	
Thiophene	4.31	5.00	86	50-200	
Isobutyl Mercaptan	4.78	5.00	96	50-200	
n-Butyl Mercaptan	6.26	5.00	125	50-200	
Diethyl Sulfide	7.03	5.00	141	50-200	
3-Methyl Thiophene	7.16	5.00	143	50-200	
Tetrahydrothiophene	7.58	5.00	152	50-200	
Dimethyl Disulfide	7.20	5.00	144	50-200	
2-Ethyl Thiophene	7.51	5.00	150	50-200	
Diethyl Disulfide	5.64	5.00	113	50-200	
2,5-Dimethyl Thiophene	6.39	5.00	128	50-200	

Recovery [C] = 100*[A]/[B]
All results are based on MDL and validated for QC purposes.

(Page 2 of 2)

LL WORK ORDER NO. 19295

SALAZAR CONSULTING GROUP, INC.

6607 Heatherton Court, Tampa, Florida 33617
(813) 980-1915 • FAX (813) 988-7486

CHAIN OF CUSTODY

Project FDOH/Chinese Wallboard **Project No.** 1466.01

Location Parkland, FL **Date:** 09 06 08

Sampled by: R. Salazar / M. Hamylak

Unit 90

	SAMPLE NO.	LOCATION	TYPE	COMMENTS
11:30A	090608-RS-15	Fields 1st Floor MSBRM	Tedlar Bag	
11:35A	-16	Outdoors		
1:35P	-17	2nd Floor FR		
1:35P	-18	Outdoors		
3:35P	-19	1st FL. - Master Bedroom		
3:35P	-20	Outdoors		
3:35P	-21	Field Blank		

Laboratory Instructions:

- ***Please invoice Salazar Consulting Group, Inc.***
- ***FAX preliminary results and mail final results.***
- ***Other:*** _____

CHAIN OF CUSTODY DATA:

Collected by: R. Salazar / M. Hamylak **Date:** ~~6/8 6/9/09~~ 6/8/09

Packaged/Sent by: R. Salazar **Date:** 6/8/09

Transporter: ~~FedEx~~ Lakeland Labs Courier **Date:** 6/8/09

Laboratory: Lakeland Labs

Lab Receiver: [illegible] **Date:** 8 JUN 2009

Lab Analyst: _____ **Date:** _____

PLEASE RETURN THIS FORM WITH ANALYTICAL RESULTS

Appendix E

Units 80 & 81 Volatile Organic Compound Results

Unit 80 VOC Data

cas_number	chemical	16308-010AA SV1 (1.000) c_522720	16308-010AA SV2 (2.000) c_522721	16308-010AA SV3 (3.000) c_522722	16308-010AA SV4 (4.000) c_522723	16308-010AA SV5 (5.000) c_522724	16308-010AA SV16 (16.000) c_522737	16308-010AA SV17 (17.000) c_522738	16308-010AA SV18 (18.000) c_522739	16308-020AA SV1 (1.000) c_522803	16308-020AA SV2 (2.000) c_522805
						Test Home					
	Home Identification	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80
	Sample Location	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E
	Location Description	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR
	Start-End Times	9:19-13:19	9:19-13:19	9:19-13:19	9:19-13:19	9:19-13:19	15:45-19:45	15:45-19:45	15:45-19:45	15:45-19:45	15:45-19:45
	TVOC (ug/m3)	**644**	**669**	**722**	**711**	**680**	**538**	**593**	**552**	**540**	**574**
1000282-73-6	Pentanoic acid, 6-ethyl-3-octyl ester		0.5		0.7	0.6					
1000-86-8	1,3-Pentadiene, 2,4-dimethyl										
1002-43-3	Undecane, 3-methyl										
100-41-4	Benzene, ethyl	5.5	6.3	5.9	6.3	7	4.2	5.3	4.5	4.4	4.9
100-42-5	Styrene	5.5	5.8	5.8	6.3	5.8	4.4	4.6	4.6	4.4	4.6
100-47-0	Benzonitrile										
100-52-7	Benzaldehyde	10.6	10.9	11.2	12	11.1	8.4	12.2	8.9	8.6	9
100-97-0	1,3,5,7-Tetraazatricyclo[3.3.1.13,7]decane (Methenamine)										
10105-38-1	Pentadecane, 6-methyl	0.2	0.2	0.8	0.2	0.1			0.2		
101-39-3	Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)	1.6	1.7	2.8	2.3	2.3	1.5	1.4	1.2	1.1	1.5
102-76-1	1,2,3-Propanetriol, triacetate (Triacetin)										
103-09-3	Acetic acid, 2-ethylhexyl ester										
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester										
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)	2	2.1	3.2	2.2	2.2	1.8	1.9	1.6	1.4	1.9
104-67-6	2(3H)-Furanone, 5-heptyldihydro			0.1							
10473-13-9	3-Buten-2-ol, 2,3-dimethyl-										
104-76-7	1-Hexanol, 2-ethyl						12.4	11.1	11.2	12.5	11.5
10486-19-8	Tridecanal										
10496-18-1	Decyl disulfide										
105-60-2	î-Caprolactam (2H-Azepin-2-one, hexahydro)							0.9	0.7	0.5	0.8
106-35-4	3-Heptanone										
106-42-3	Xylene (para and/or meta)	17.6	18.7	19	20.3	19.3	13.7	14.6	14.6	14.2	14.9
106-46-7	Benzene, 1,4-dichloro										
106-62-7	1-Propanol, 2-(2-hydroxypropoxy)										
107-02-8	Acrolein (2-Propenal)										
107-06-2	Ethane, 1,2-dichloro	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1070-66-2	2-n-Butylacrolein							0.9	0.9	0.9	0.9
1071-81-4	Hexane, 2,2,5,5-tetramethyl									0.2	0.2
107-21-1	1,2-Ethanediol (Ethylene glycol)										
107-39-1	1-Pentene, 2,4,4-trimethyl										
107-83-5	Pentane, 2-methyl	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2
107-86-8	2-Butenal, 3-methyl										
107-87-9	2-Pentanone				0.5					0.4	
107-89-1	Butanal, 3-hydroxy									0.3	
107-92-6	Butanoic acid	1.2	1.3	1.2	1.2	1.2	0.9	1	1	1	1
108-05-4	Acetate, vinyl (Acetic acid ethenyl ester)										0.5
108-08-7	Pentane, 2,4-dimethyl										
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)			0.7	0.7	0.6	0.5	0.5	0.6	0.6	0.6
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)	5	5.3				4				4.3
108-87-2	Cyclohexane, methyl						1.2	1.7	0.6		
108-88-3	Toluene (Methylbenzene)	13.3	14.2	14.6	15.4	14.8	10	10.8	10.7	10.2	10.9
108-95-2	Phenol										
109-52-4	Pentanoic acid (Valeric acid)										
109-66-0	Pentane	1.7		2.1	2	2					
109-69-3	Butane, 1-chloro	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
109-94-4	Formic acid, ethyl ester										
109-99-9	Furan, tetrahydro (THF)		0.1		0.1						
110-19-0	Acetic acid, 2-methylpropyl ester (Isobutyl acetate)	1.2	1.3	1.3	1.4	1.3	0.9	1	1	0.9	1
110-27-0	Tetradecanoic acid, 1-methylethyl ester (Isopropyl Myristate)	0.2	0.2	0.1	0.1			0.2			
11028-42-5	Cedrene										
110-43-0	2-Heptanone	3.4	3.6	3.6	3.9	3.7	3	3.2	3.2	3.1	3.3
110-54-3	Hexane										
110-62-3	Pentanal	12.3	13.2	12.9	14.3	13.7	11.7	14.6	11.6	10.5	11.7
110-80-5	Ethanol, 2-ethoxy										
110-82-7	Cyclohexane						0.5	0.8	0.4	0.3	0.1
110-86-1	Pyridine	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
110-87-2	2H-Pyran, 3,4-dihydro		0.1								
110-93-0	5-Hepten-2-one, 6-methyl										
111-02-4	2,6,10,14,18,22-Tetracosahexaene, 2,6,10,15,19,23-hexameth						2.5	2	1.9		0.2
111-14-8	Heptanoic acid										
111-27-3	1-Hexanol (N-Hexyl alcohol)										
111-65-9	Octane										
111-66-0	1-Octene										
111-70-6	1-Heptanol	4.7	4.8	4.9	6.2	5.6	3.9	4.1		3.9	4
111-71-7	Heptanal (Heptaldehyde)	7.4	7.3	7.7	8.6	7.9	6.2	6.7	6.8	6.4	6.7
111-76-2	Ethanol, 2-butoxy										
111-77-3	Ethanol, 2-(2-methoxyethoxy)										
111-84-2	Nonane	1.9	2	2	2.1	2	1.4	1.6	1.5	1.6	1.6
111-87-5	1-Octanol										
1120-21-4	Undecane	11.6	12	13.3	12.4	12.5	9.1	9.5	9.1	8.1	10.5
1120-24-7	1-Decanamine, N,N-dimethyl-										
1120-36-1	1-Tetradecene										
112-05-0	Nonanoic acid										
1120-73-6	2-Cyclopenten-1-one, 2-methyl				0.1	0.1					
112-12-9	2-Undecanone										0.6
1122-82-3	Cyclohexane, isothiocyanato										
112-31-2	Decanal	2.6	2.4	4.1	2.6	2.7	2.3	2.3	2	1.6	2.5
112-34-5	Ethanol, 2-(2-butoxyethoxy)										
112-40-3	Dodecane			5.3					1.5		1.1
112-41-4	1-Dodecene	2.9	2.8	4	3.1	3.1	2.2	2.4	2	2.1	2.5
112-44-7	Undecanal										
112-54-9	Dodecanal										
112-72-1	1-Tetradecanol										
112-88-9	1-Octadecene										
112-95-8	Eicosane							0.1	0.3		
1138-52-9	Phenol, 3,5-bis(1,1-dimethylethyl)-										
115-18-4	3-Buten-2-ol, 2-methyl							0.1			
119209-20-0	Decane, 5,6-dipropyl-										
1192-18-3	Cyclopentane, 1,2-dimethyl, cis								4.1		
1192-33-2	Cyclobutanone, 3,3-dimethyl-								0.7		
1195-79-5	Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl										
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-	2.1	2.2	2.6	2.2	2.2	1.7	2.1	1.6	1.6	1.9
119-61-9	Benzophenone (Diphenyl methanone)		0.2	0.2	0.1	0.1			0.5	0.1	0.1
122-03-2	Benzaldehyde, 4-(1-methylethyl)		0.4		0.4	0.4	0.6			0.2	
1222-05-5	Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8										
122-99-6	Ethanol, 2-phenoxy										
123-05-7	Hexanal, 2-ethyl										
123-11-5	Benzaldehyde, 4-methoxy-					1.2	1	1.3		1.1	0.6
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)			5.4				4.3	4.2		
123-51-3	1-Butanol, 3-methyl	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
123-72-8	Butanal										
123-73-9	2-Butenal, (E)-									0.2	0.2
124-07-2	Octanoic Acid										
124-10-7	Methyl tetradecanoate										
124-11-8	1-Nonene						0.8				
124-13-0	Octanal	12.7	13.7	13.6	14.6	13.5	10.4	10.9	11.1	11.8	11.1
124-18-5	Decane										

124-19-6	Nonyl aldehyde (Nonanal)	20.9	21.3	19.8	23.8	22.1	16.8	17.3	17.1	16	18.1
127-00-4	2-Propanol, 1-chloro	4.7	4.2	4.1	4.6	4.8	4.9	5.8	4.6	4.9	5.2
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3
127-51-5	à-Isomethyl ionone	0.8	0.9	2.1	0.7	0.6	0.7	1	0.8	0.5	0.7
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)	32.6	33.4	34.5	36.3	39.5	25.4	27	27	31.1	28.6
13150-81-7	Decane, 2,6-dimethyl	10.2	10.2		10.6	11	7.7	8.3	7.1		
13151-05-8	1-Heptene, 4-methyl										
13151-34-3	Decane, 3-methyl		9.9	2.6	28.6	27.5	7.5	7.8	7.4	7.2	8.7
13151-35-4	Decane, 5-methyl			10.9							
13151-94-5	Cyclooctane, 1,2-dimethyl-										
13287-23-5	Heptadecane, 8-methyl-	0.1									
13466-78-9	3-Carene										
13475-82-6	Heptane, 2,2,4,6,6-pentamethyl	16.7	17.8	17.8	19	17.8	12.8	13.7	13.4	15	13.9
13547-70-1	2-Butanone, 1-chloro-3,3-dimethyl-	0.7									
13674-84-5	Tris(1-chloro-2-propyl)phosphate	0.2	0.2	0.2	0.3	0.3					
137-32-6	1-Butanol, 2-methyl	0.3							0.3		
13851-11-1	Fenchyl acetate										
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)	21.1	23.1	23.3	23.4	23	16.9	18	17.9	17.8	18.9
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)									2	
140-67-0	Estragole (4-Allylanisole)	4.2	3.8	5.6	4.2	4.4	3.3	3.8	3.3	3	4
141-63-9	Pentasiloxane, dodecamethyl										
141-78-6	Acetate, ethyl	0.5	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.4	0.5
142-29-0	Cyclopentene										
142-62-1	Hexanoic acid			2.5						2.3	2.6
142-82-5	Heptane	0.3	0.3		0.3	0.3					
143-07-7	Dodecanoic acid									0.3	0.1
143-08-8	1-Nonanol										
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl	1	0.9		1.1		0.8	1.1	0.8	0.7	0.9
1462-03-9	Cyclopentanol, 1-methyl			0.1		0.1					
14686-13-6	2-Heptene, (E)										
1472-09-9	Cyclopropane, octyl										
1486-51-7	4-Benzyloxybenzoic acid										
1498-69-7	Anthracene, 9-butyl-		0.2	0.3							
1503-49-7	4-Cyanobenzophenone										
1560-88-9	Octadecane, 2-methyl-	0.3	0.2	0.2	0.1	0.1		0.2	0.4		
1560-89-0	Heptadecane, 2-methyl										
1560-92-5	Hexadecane, 2-methyl-	0.1	0.1								
1560-93-6	Pentadecane, 2-methyl	0.3	0.2						0.3		
1560-95-8	Tetradecane, 2-methyl			0.5							
1560-96-9	Tridecane, 2-methyl			1.9							
1560-97-0	Dodecane, 2-methyl										
15798-64-8	2-Butenal, (Z)-	0.2	0.3	0.2	0.2	0.2	0.2				
15869-87-1	Octane, 2,2-dimethyl							3.3			
15869-94-0	Octane, 3,6-dimethyl			1.9							
15877-57-3	Pentanal, 3-methyl	0.2	0.2			0.2	0.2	0.2	0.2	0.2	0.2
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl										
1640-89-7	Cyclopentane, ethyl						0.4	0.6			
16728-99-7	Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methyl	0.2	0.2	0.5	0.3	0.1	0.2				
17302-11-3	Nonane, 3-ethyl			2.4							
17302-27-1	Nonane, 2,5-dimethyl									2.1	
17302-32-8	Nonane, 3,7-dimethyl	18	16.1	16.6	19.6	19.1	13.5	14.1	13.2	12.7	14.7
17302-37-3	Decane, 2,2-dimethyl	7	7.2	7.6	7.7	7.4	5.2	5.5	5.2	5.9	5.6
17312-53-7	Decane, 3,6-dimethyl	10.4	10.1	14.9	10	11.5					
17312-54-8	Decane, 3,7-dimethyl-			12.3							
17312-57-1	Dodecane, 3-methyl			0.9							
17312-80-0	Undecane, 2,4-dimethyl			2.7							
17453-93-9	Dodecane, 5-methyl		1.7	1.9	0.6	1.2	1.4				
1757-42-2	Cyclopentanone, 3-methyl	0.3	0.3	0.3	0.3	0.8	0.2	0.2	0.3		
17603-57-5	4-Methyl-1,3-heptadiene (c,t)					1.1					
1809-10-5	Pentane, 3-bromo-										
1838-59-1	Formic acid, 2-propenyl ester		0.1		0.1	0.1					
18435-22-8	Tetradecane, 3-methyl										
18435-45-5	1-Nonadecene	0.2	0.2	0.1	0.7	0.2	0.1	0.1	0.1	0.1	
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate	1.1	1.4	3.3	0.9	0.8	0.9	1.2	1.8	0.8	1.4
18794-77-9	Thiophene, 2-hexyl	2	3.5	3	1.3	2.4	1.2	3.7	1.3	2.5	3.7
18968-23-5	Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-, (1à, 3à, 6à)									4	4.5
19095-23-9	Heptasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13-tetradecamethyl							0.1			
19095-24-0	Octasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-hexadecar										
1921-70-6	Pentadecane, 2,6,10,14-tetramethyl								0.2		
192823-15-7	Decane, 2,3,5,8-tetramethyl-										
2004-70-8	1,3-Pentadiene, (E)										
2021-28-5	Benzenepropanoic acid, ethyl ester	0.5	0.6	1.2	0.6	0.4	0.4	0.5	0.5	0.5	0.4
2040-96-2	Cyclopentane, propyl										
2051-30-1	Octane, 2,6-dimethyl	2.5	3	0.6	3	2.6	2	2	2	1.7	1.4
20521-42-0	2-Butenal, 2-ethenyl									0.1	0.1
20959-33-5	Heptadecane, 7-methyl-		0.1	0.1	0.1	0.1			0.3		
2116-65-6	Pyridine, 4-(phenylmethyl)-							0.2			
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-	1		0.9							
21856-89-3	2-Hexanone, 6-hydroxy-										
2213-23-2	Heptane, 2,4-dimethyl	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.3
2213-32-3	1-Pentene, 2,4-dimethyl	1.1	1	1.1	1		0.8				
2216-33-3	Octane, 3-methyl										
24081-57-0	Ketone, 1,5-dimethylbicyclo[2.1.0]pent-5-yl methyl										
2452-99-5	Cyclopentane, 1,2-dimethyl										
2453-00-1	Cyclopentane, 1,3-dimethyl	0.1									
24851-98-7	3-Oxo-2-pentylcyclopentane acetate, methyl (Methyl dihydrojas										
24903-95-5	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-										
2497-25-8	2-Decenal, (Z)-										
25117-26-4	Hexadecane, 4-methyl-										
25117-31-1	Tridecane, 5-methyl										
25117-33-3	Pentadecane, 5-methyl										
2511-91-3	Cyclopropane, pentyl-										
2548-87-0	2-Octenal, (E)										
26730-20-1	Hexadecane, 7-methyl-	0.1	0.2								
2755-07-9	Undecane, 5-ethyl-5-propyl										
2758-18-1	2-Cyclopenten-1-one, 3-methyl										0.1
2792-39-4	2,6-Octadiene, 2,6-dimethyl-										
2801-87-8	Pentadecane, 4-methyl								0.2		
28634-89-1	Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)-										
287-92-3	Cyclopentane		0.2				0.4	0.6	0.4	0.5	
2882-96-4	Pentadecane, 3-methyl	0.2	0.3	0.5	0.3		0.3		0.2		
290-37-9	Pyrazine		0.3	0.4	0.4	0.6					0.3
29066-34-0	Menthyl acetate	5.7	5.6	5.2	5.7	6					
291-64-5	Cycloheptane										
292-64-8	Cyclooctane										
295-17-0	Cyclotetradecane	0.2	0.3	0.6							
2980-69-0	Undecane, 4-methyl									7.4	8.7
3074-78-0	1-Heptene, 2,6-dimethyl-										
3208-16-0	Furan, 2-ethyl	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)	5.4	4.6	5.9	5.3	5.6	4	1.1	4.2	4	5.3
334-48-5	Decanoic acid										
3391-86-4	1-Octen-3-ol										
3404-61-3	1-Hexene, 3-methyl										
3452-07-1	1-Eicosene						0.1	0.1	0.1		
35953-53-8	2-Tetradecene, (E)-										
36653-82-4	1-Hexadecanol										
3741-00-2	Cyclopentane, pentyl										

37617-26-8	Cyclopropane, 1-methyl-2-octyl										
3796-70-1	5,9-Undecadien-2-one, 6,10-dimethyl-, (E)-										
3839-22-3	o-Cyanobenzoic acid										
38651-65-9	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-, (1R)-										
39029-41-9	Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methyler	0.7	0.7								
39884-53-2	N-Nitroso-2-methyl-oxazolidine	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1
40117-45-1	Heptane, 2,2,6,6-tetramethyl	9.7	2.2		10.5	10.1					
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl			0.6			0.2	0.3	0.3	0.2	0.2
4458-32-6	1-Propanamine, N-ethyl-N-methyl							1.2			
464-48-2	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)	4.5	4.2		4.7	4.9	3.4	4.4	3.5		
464-49-3	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1R)									3.3	4
4695-62-9	Fenchone (Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl-)										
469-61-4	Cedrene, à	1	1.1	5.7		0.2	0.8		0.5		
470-40-6	Thujopsene	1.6	1.6		1.7	1.7	1.5	1.8	1.2	1.2	1.6
4747-07-3	Hexane, 1-methoxy	0.8	0.8	0.7	1	0.8					
475-20-7	Longifolene			1.9	0.7	0.5	0.5	0.7	0.7	0.4	0.4
4810-09-7	1-Heptene, 3-methyl									0.4	0.5
483-75-0	Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methy										
489-40-7	1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-				0.8	0.8		0.7		0.7	0.7
4914-91-4	2-Pentene, 3,4-dimethyl-, (Z)-										
4942-47-6	1-Adamantaneacetic acid			0.1							
500-02-7	2-Cyclohexen-1-one, 4-(1-methylethyl)-	1.5		2.1	1.8	1.6			1.2		
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one										
508-32-7	Tricyclo[2.2.1.02,6]heptane, 1,7,7-trimethyl-										
5131-66-8	2-Propanol, 1-butoxy	2.6	2.7	2.8	3	2.8	2.2	2.4	2.3	2.3	2.4
513-35-9	2-Butene, 2-methyl	0.1	0.1	0.1	0.1	0.1					
515-13-9	Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl), [1S										
527-53-7	Benzene, 1,2,3,5-tetramethyl									2	2.5
534-22-5	Furan, 2-methyl-	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
539-90-2	Butanoic acid, 2-methylpropyl ester										
540-97-6	Cyclohexasiloxane, dodecamethyl	1.5	1.8	2.3	1.4				1.5		
541-01-5	Heptasiloxane, hexadecamethyl-										
541-02-6	Cyclopentasiloxane, decamethyl	15.5	15.4	30.2	14.8	17.3	12	12	9.8	9.3	13.8
541-05-9	Cyclotrisiloxane, hexamethyl								0.1		
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate			1.7							
542-28-9	2H-Pyran-2-one, tetrahydro-										
543-49-7	2-Heptanol										
5441-52-1	Cyclohexanol, 3,5-dimethyl										
544-63-8	Tetradecanoic acid	0.2	0.6	0.4	0.2					0.4	0.3
544-76-3	Hexadecane (Cetane)	0.3	0.5	0.5	0.2				0.5		
546-28-1	1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methyle										
55030-62-1	Tridecane, 4,8-dimethyl										
55045-07-3	Dodecane, 2-methyl-8-propyl										
555-10-2	á-Phellandrene										
556-67-2	Cyclotetrasiloxane, octamethyl	12.7	14.2	12.9	14.8	13.9	10.5	7.2	11	10.8	10.8
556-82-1	2-Buten-1-ol, 3-methyl										
562-49-2	Pentane, 3,3-dimethyl										
56292-65-0	Dodecane, 2,5-dimethyl										
563-80-4	2-Butanone, 3-methyl	0.5	0.6	0.6		0.6					
56539-66-3	3-Methoxy-3-methylbutanol										
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-										
565-59-3	Pentane, 2,3-dimethyl						1.6	2.8			
565-69-5	3-Pentanone, 2-methyl						0.2	0.3	0.2		
565-75-3	Pentane, 2,3,4-trimethyl										
565-77-5	2-Pentene, 2,3,4-trimethyl										
565-80-0	3-Pentanone, 2,4-dimethyl					6.2	4.7		4.9	4.9	4.9
57-55-6	1,2-Propanediol (Propylene glycol)									0.7	0.6
58-08-2	Caffeine									0.1	
585-34-2	Phenol, m-tert-butyl										
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)										
589-34-4	Hexane, 3-methyl	1.8	2.4	1.9	2.3	2.9	7.3	14	4	1.7	2.9
589-35-5	1-Pentanol, 3-methyl										
589-53-7	Heptane, 4-methyl										
589-81-1	Heptane, 3-methyl										
590-35-2	Pentane, 2,2-dimethyl										
590-73-8	Hexane, 2,2-dimethyl										
591-76-4	Hexane, 2-methyl	2.2	2.7	2.3	2.6	3.2	5.2	9.6	4	2	3
591-78-6	2-Hexanone	1.2	1.9	1.9	2.1	2.1	1.6	1.9	1.8	1.7	2.1
592-13-2	Hexane, 2,5-dimethyl						0.3				
592-27-8	Heptane, 2-methyl										
592-41-6	1-Hexene										
592-76-7	1-Heptene										
592-77-8	2-Heptene										
592-84-7	Formic acid, butyl ester										
593-45-3	Octadecane	0.1							0.3		
598-25-4	1,2-Butadiene, 3-methyl										
598-61-8	Cyclobutane, methyl										
5911-04-6	Nonane, 3-methyl										
6094-02-6	1-Hexene, 2-methyl-										
60-12-8	Phenylethyl Alcohol										
6032-29-7	2-Pentanol			0.2		0.2					0.2
60-35-5	Acetamide										
6044-71-9	Dodecane, 6-methyl			1							
61141-83-1	Cyclobutane, 1,2-diethyl										
6117-97-1	Dodecane, 4-methyl										0.4
6131-25-5	Heptane, 3-methyl										
616-45-5	2-Pyrrolidinone										
6165-40-8	Pentadecane, 7-methyl-								0.3		
6165-40-8-	Pentadecane, 7-methyl-								0.3		
617-78-7	Pentane, 3-ethyl						1.2	2.2	0.4	0.2	0.2
617-94-7	Benzenemethanol, à,à-dimethyl-										
620-14-4	Benzene, 1-ethyl-3-methyl				5.3						
62016-14-2	Octane, 2,5,6-trimethyl	16.3	14.8	14.9	15.3	15			20.7		
62016-33-5	Octane, 2,3,6-trimethyl		2.7	2.5	2.5	2.1					
62016-37-9	Octane, 2,4,6-trimethyl	25.8	26.2	26.7			19.8	22.7	1.5	20.5	22.5
62016-49-3	Butane, 2-methoxy-3-methyl										
62108-31-0	Heptane, 4-ethyl-2,2,6,6-tetramethyl						7.9	8.5	6.9	4.5	9.4
62108-33-2	3-Octyne, 5-methyl-										
62183-55-5	Octane, 3-ethyl-2,7-dimethyl	10.3	8.7	11.5	9.7	10.6	7.7	8.6	7.5		
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-	37.1	37.5	39.4	40.8	39.5	28	29.9	28.8	28	31
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)	4.1	4.3	4.4	4.6	4.4	3.1		3.3	3.3	3.3
624-16-8	4-Decanone										
625-23-0	2-Hexanol, 2-methyl										
6259-76-3	n-Hexyl salicylate	0.2	0.3	0.1							
626-93-7	2-Hexanol										
627-21-4	2-Pentyne	0.8	0.9	0.9			1.1				
628-32-0	Propane, 1-ethoxy-										
629-15-2	1,2-Ethanediol, diformate				0.2						
629-50-5	Tridecane										
629-62-9	Pentadecane	0.3	0.5						0.6		
629-78-7	Heptadecane	0.2	0.2	0.1	0.1	0.1		0.1	0.3	0.1	
629-80-1	Hexadecanal		0.2								0.1
629-92-5	Nonadecane	0.3									
638-04-0	Cyclohexane, c-1,3-dimethyl										
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	0.1	0.1	0.1	0.1						
638-49-3	Formic acid, pentyl ester	0.6	0.7	0.7	0.8	1	0.5	0.6	0.6	0.6	0.6
6418-41-3	Tridecane, 3-methyl										

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6418-43-5	Hexadecane, 3-methyl	0.1	0.1	0.1							
6418-44-6	Heptadecane, 3-methyl										
64-19-7	Acetic acid	10.5	8.5	3.5	21.6	14	16.9	16.3	18	16.9	16.5
645-13-6	Ethanone, 1-[4-(1-methylethyl)phenyl]-										
6508-77-6	6-Tridecene, (Z)-										
65-85-0	Benzoic Acid										
66-25-1	Hexanal	38.2	37.6	39.3	45.6	34.7	27.8	34.3	28.4	26.5	29.6
67-63-0	2-Propanol (Isopropanol)				3.2	0.8		2.9	3.1		
67-64-1	Acetone		2.2				1.8	1.9	1.9	1.7	1.9
6765-39-5	1-Heptadecene									0.1	
6795-87-5	Butane, 2-methoxy							0.1	0.1	0.1	
68-12-2	Formamide, N,N-dimethyl			0.8				0.7	0.8		0.7
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)	0.4	1.1	0.7	0.1	0.1	0.1		1.4	0.1	0.1
6876-23-9	Cyclohexane, t-1,2-dimethyl	1	1.1	1.1	1.1	1.1					
689-67-8	5,9-Undecadien-2-one, 6,10-dimethyl-										
690-08-4	2-Pentene, 4,4-dimethyl, (E)	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.3		
693-54-9	2-Decanone						4.5	4.6	3.9		
6938-94-9	Hexanedioic acid, bis(1-methylethyl) ester							0.7	0.4		
6975-92-4	1-Hexene, 2,5-dimethyl									0.8	0.3
6975-98-0	Decane, 2-methyl										
7045-71-8	Undecane, 2-methyl									6	7.4
71-23-8	1-Propanol (Propyl alcohol)										
71-36-3	1-Butanol (N-Butyl alcohol)	4.4	4.5	4.5	4.4	4.5	4.1	4.5	3.9	4.1	4.4
71-41-0	1-Pentanol (N-Pentyl alcohol)	7.1	7.5	7.5	8.1	7.7	6.3	6.8	6.8	6.3	6.8
7146-60-3	Octane, 2,3-dimethyl	0.4	0.5	0.5	0.5	0.4	0.3	0.4	0.3	0.4	0.3
71579-69-6	3-Isopropoxy-1,1,1,7,7,7-hexamethyl-3,5,5-tris(trimethylsiloxy)t										
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)		0.1	0.2	0.1	0.1			0.2		0.1
7206-13-5	2-Dodecene, (E)										
7206-26-0	2-Dodecene, (Z)-										
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl			1.4							
7446-09-5	Sulfur dioxide	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
75-12-7	Formamide (Methanamide)						3.3				
75-18-3	Methyl sulfide (Methane, thiobis)										
756-02-5	1,4-Pentadiene, 2,3,3-trimethyl									0.8	
761-65-9	Formamide, N,N-dibutyl										
762-63-0	2-Pentene, 4,4-dimethyl-, (Z)-									0.4	0.3
76-49-3	Bicyclo[2.2.1]Heptan-2-ol,1,7,7-trimethyl,acetate,endo(bornyl a							4.4			
766-94-9	Benzene, (ethenyloxy)-										
77-53-2	1H-3a,7-Methanoazulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3										
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	1.7	2	5.4	1.4	1.5	1.6	2.1	2.4	1.4	2.6
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro	1.2	1.3		1.1	1	1.2	1.2	1.2	1.2	0.9
78-78-4	Butane, 2-methyl (Isopentane)	0.4	0.5	0.3	0.4	0.5	0.4	0.3	0.2	0.3	0.2
78-79-5	1,3-Butadiene, 2-methyl				0.8	0.9	0.1	1.6	1.2	1.2	1.5
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)	0.7	0.7	0.7	0.7	0.7	0.7	0.9	0.7	0.7	0.7
78-84-2	Propanal, 2-methyl (Isobutanal)	2.5	1.9	2.2	3.3	2.5	2	2.2	2.1	2.2	2.4
78-85-3	2-Propenal, 2-methyl	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1	0.1
78-89-7	1-Propanol, 2-chloro-	1.3	0.8	1	1.3	1.3	1.4	1.5	1.3	1.6	1.6
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)	5.8	6.3	7.5							
79-09-4	Propanoic acid	0.7	0.6	0.4	0.7	0.5	0.5	0.6	0.6	0.6	0.6
79-10-7	2-Propenoic acid		0.1		0.1					0.1	0.1
79-20-9	Acetate, methyl (Acetic acid, methyl ester)	0.2	0.1				0.1	0.1		0.1	0.1
79-31-2	Propanoic acid, 2-methyl	2.1	2.6	1.2	1.3	1.3	1	1	1.2	1.1	1.1
79-33-4	(S)-2-Hydroxypropanoic acid									16.1	4.3
80-54-6	Lilial										
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	71.7	74.2	69.7	79.5	75.8	60.8	64.5	63.8	61.2	63.4
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl este	0.2	0.3	0.1	0.3		0.2	0.2	0.2	0.2	0.2
80655-44-3	Decahydro-4,4,8,9,10-pentamethylnaphthalene	0.2	0.6	0.9	0.2	0.1	0.5		0.2		0.3
821-95-4	1-Undecene										
822-50-4	Cyclopentane, 1,2-dimethyl, trans							0.3	0.1		
85-41-6	1H-Isoindole-1,3(2H)-dione										
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)										
871-83-0	Nonane, 2-methyl										
872-05-9	1-Decene										
872-50-4	2-Pyrrolidinone, 1-methyl										
89-48-5	Menthyl acetate	5.7	5.6	5.2	5.7	6					
90346-45-5	Cyclobutene, 1,2,3,4-tetramethyl-	0.9	1.6		1		0.8				
91-20-3	Naphthalene	3.2	2.1	3	2.6	2.4	2.6	2.2	2.4	2.5	2.7
91-64-5	Coumarin (2H-1-Benzopyran-2-one)	0.2	0.2	0.3	0.2	0.1	0.2		0.3		
922-63-4	2-Ethylacrolein										
92-51-3	1,1'-Bicyclohexyl				0.3						
930-27-8	Furan, 3-methyl									0.2	0.2
930-60-9	4-Cyclopentene-1,3-dione										
93-58-3	Benzoic acid, methyl ester										
95-16-9	Benzothiazole	1.6	1.5	2.1	1.6	1.8	1.5	1.7	1.2	1.2	1.1
95-47-6	Xylene, ortho	7	7.5	7.6	8.1	7.7	5.6	6	6	5.9	6.1
95-93-2	Benzene, 1,2,4,5-tetramethyl	2.5	2.5	2.9	2.8	2.5	2	2.1	2	1	1.2
96-14-0	Pentane, 3-methyl			0.2	0.3						
96-37-7	Cyclopentane, methyl	0.3	0.2	0.4	0.2	0.4	0.9	1.5	0.3		0.1
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)	1.4	1.5	1.5	1.7	1.5	1.1	1.2	1.2	1.3	1.2
96-76-4	Phenol, 2,4-bis(1,1-dimethylethyl)-							0.4		0.2	
97-64-3	Propanoic acid, 2-hydroxy-, ethyl ester	3.7	7	4.7							
97-95-0	1-Butanol, 2-ethyl	0.1	0.2	0.2	0.2	0.4					
97-96-1	Butanal, 2-ethyl-										
98-01-1	Furfural (2-Furaldehyde)	2.2	2.3	2.4	2.6	2.4	1.9	2	2.4	2	2
98-19-1	Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl					1.7					
98-56-6	Benzene, 1-chloro-4-(trifluoromethyl)-	13	13.9	14.1	14.7	14.3	13.2	14.5	14.5	14.4	15
98-83-9	à-Methylstyrene (iso-Propenylbenzene; (1-Methylethenyl)benz										
98-86-2	Acetophenone (Ethanone, 1-phenyl)										
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-	0.1									
99-62-7	Benzene, 1,3-diisopropyl										

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cas_number	chemical	16308-010AA SV6 (6.000) c_522725	16308-010AA SV7 (7.000) c_522726	16308-010AA SV8 (8.000) c_522727	16308-010AA SV9 (9.000) c_522728	16308-010AA SV10 (10.000) c_522729	16308-020AA SV3 (3.000) c_522806	16308-020AA SV4 (4.000) c_522807	16308-020AA SV5 (5.000) c_522808	16308-020AA SV6 (6.000) c_522809	16308-020AA SV7 (7.000) c_522810
		Control Home									
	Home Identification	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81	Unit 81
	Sample Location	Loc 1A	Loc 1B	Loc 1C	Loc 1D	Loc 1E	Loc 1A	Loc 1A	Loc 1A	Loc 1A	Loc 1A
	Location Description	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR
	Start-End Times	9:10-13:10	9:10-13:10	9:10-13:10	9:10-13:10	9:10-13:10	15:50-19:50	15:50-19:50	15:50-19:50	15:50-19:50	15:50-19:50
	TVOC (ug/m3)	**298**	**324**	**297**	**299**	**308**	**276**	**254**	**261**	**319**	**321**
1000282-73-6	Pentanoic acid, 6-ethyl-3-octyl ester										
1000-86-8	1,3-Pentadiene, 2,4-dimethyl								0.1		
1002-43-3	Undecane, 3-methyl									0.4	0.5
100-41-4	Benzene, ethyl	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.3	0.6	0.7
100-42-5	Styrene	1.1	1.3	1	1.1	1.2	1	0.9	0.9	0.9	1
100-47-0	Benzonitrile										
100-52-7	Benzaldehyde	3.9	4.3	3.9	3.9	4	3.4	3.2	3.5	3.5	3.5
100-97-0	1,3,5,7-Tetraazatricyclo[3.3.1.13,7]decane (Methenamine)									0.3	
10105-38-1	Pentadecane, 6-methyl		0.3	0.2	0.1	0.2				0.4	0.4
101-39-3	Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)										
102-76-1	1,2,3-Propanetriol, triacetate (Triacetin)										
103-09-3	Acetic acid, 2-ethylhexyl ester										
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester							0.3			
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)										
104-67-6	2(3H)-Furanone, 5-heptyldihydro										
10473-13-9	3-Buten-2-ol, 2,3-dimethyl-	1.6	1.7	1.5	1.5	2					
104-76-7	1-Hexanol, 2-ethyl	4.9	4.2	3.9	4	4.5	3.8		3.3	3.9	4.1
10486-19-8	Tridecanal									0.7	0.8
10496-18-1	Decyl disulfide							0.1			
105-60-2	î-Caprolactam (2H-Azepin-2-one, hexahydro)	0.6	0.6	0.6	0.6	0.7	0.6	0.5	0.4	0.7	0.6
106-35-4	3-Heptanone										
106-42-3	Xylene (para and/or meta)	1.6	1.6	1.5	1.5	1.5	1.2	1	1.2	1	1
106-46-7	Benzene, 1,4-dichloro										
106-62-7	1-Propanol, 2-(2-hydroxypropoxy)									0.5	0.7
107-02-8	Acrolein (2-Propenal)										
107-06-2	Ethane, 1,2-dichloro										0.1
1070-66-2	2-n-Butylacrolein	0.3	0.3	0.3	0.2	0.3		0.2	0.2	0.2	0.2
1071-81-4	Hexane, 2,2,5,5-tetramethyl										
107-21-1	1,2-Ethanediol (Ethylene glycol)									1.2	2.1
107-39-1	1-Pentene, 2,4,4-trimethyl										
107-83-5	Pentane, 2-methyl	0.3	0.3	0.3	0.3	0.2					
107-86-8	2-Butenal, 3-methyl	0.6	0.6	0.5	0.6	0.5	0.4	0.4	0.4		
107-87-9	2-Pentanone	1.1	1.1	0.9	1	0.9	0.8	0.7	0.6	0.6	0.6
107-89-1	Butanal, 3-hydroxy										
107-92-6	Butanoic acid	1	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.6	0.7
108-05-4	Acetate, vinyl (Acetic acid ethenyl ester)										
108-08-7	Pentane, 2,4-dimethyl	0.3	0.2	0.1	0.2	0.1					
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)						0.2	0.2		0.2	
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)										
108-87-2	Cyclohexane, methyl	0.7	0.8	0.5	0.7						
108-88-3	Toluene (Methylbenzene)	2.4	2.3	2.2	2.1	2.2	1.6	1.4	1.5	1.3	1.5
108-95-2	Phenol										
109-52-4	Pentanoic acid (Valeric acid)		1.1						1	0.2	0.2
109-66-0	Pentane		1.3	1.3	1.2	1.5		1.4	1.5		
109-69-3	Butane, 1-chloro										
109-94-4	Formic acid, ethyl ester			0.5							
109-99-9	Furan, tetrahydro (THF)									0.1	0.2
110-19-0	Acetic acid, 2-methylpropyl ester (Isobutyl acetate)	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.4
110-27-0	Tetradecanoic acid, 1-methylethyl ester (Isopropyl Myristate)					0.7					
11028-42-5	Cedrene									1.8	2
110-43-0	2-Heptanone	2.4	2.5	2.4	2.4	2.4	2.2	2.1	2.2	2.2	2.3
110-54-3	Hexane										
110-62-3	Pentanal	6.8	6.9	5.7	6.6	5.6	5	4.5	4.9	3.5	3.8
110-80-5	Ethanol, 2-ethoxy	0.1			0.1	0.1			0.1		
110-82-7	Cyclohexane						0.1			0.1	0.2
110-86-1	Pyridine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
110-87-2	2H-Pyran, 3,4-dihydro										
110-93-0	5-Hepten-2-one, 6-methyl										
111-02-4	2,6,10,14,18,22-Tetracosahexaene, 2,6,10,15,19,23-hexameth						0.5			1.1	
111-14-8	Heptanoic acid						1.2				
111-27-3	1-Hexanol (N-Hexyl alcohol)	4.7	3.5	4.9	4.8	5	3.3	3.9	3.4	4.2	4.7
111-65-9	Octane							0.6			0.1
111-66-0	1-Octene		0.3	0.1	0.3		0.2				
111-70-6	1-Heptanol	3.9	3.9	3.8	3.7	3.8	3.4	3.2	3.5	3.4	3.5
111-71-7	Heptanal (Heptaldehyde)	5.1	5.1	5	5	5	4.3	4.2	4.5	4.4	4.5
111-76-2	Ethanol, 2-butoxy										
111-77-3	Ethanol, 2-(2-methoxyethoxy)	0.9	0.7	0.6	0.8	0.6				0.1	0.2
111-84-2	Nonane	0.9	0.9	0.9	0.8	0.9	0.9	0.8	0.9	0.7	0.8
111-87-5	1-Octanol	3.4	3.6	3.5	3.4		3.3			3.7	3.8
1120-21-4	Undecane									4.9	5.3
1120-24-7	1-Decanamine, N,N-dimethyl-										
1120-36-1	1-Tetradecene									0.4	
112-05-0	Nonanoic acid									1.4	
1120-73-6	2-Cyclopenten-1-one, 2-methyl								0.1		
112-12-9	2-Undecanone										0.5
1122-82-3	Cyclohexane, isothiocyanato	0.2	0.2	0.3	0.3						
112-31-2	Decanal	1.7	1.9	1.8	2	2.8	2.1	2.1	1.3	4	3.7
112-34-5	Ethanol, 2-(2-butoxyethoxy)									1	1.1
112-40-3	Dodecane										
112-41-4	1-Dodecene		1.3	1.2	1.1	1.4	1.2	1.1	0.9	1.7	1.8
112-44-7	Undecanal									1.2	1.3
112-54-9	Dodecanal									1	1.1
112-72-1	1-Tetradecanol									0.4	0.4
112-88-9	1-Octadecene						0.2			0.6	
112-95-8	Eicosane							0.3	0.1		
1138-52-9	Phenol, 3,5-bis(1,1-dimethylethyl)-									1.4	1.8
115-18-4	3-Buten-2-ol, 2-methyl										
119209-20-0	Decane, 5,6-dipropyl-									1.3	
1192-18-3	Cyclopentane, 1,2-dimethyl, cis										
1192-33-2	Cyclobutanone, 3,3-dimethyl-										
1195-79-5	Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl								1.4		
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-	1.5	1.6	1.6	1.7	1.8	1.5	1.4	1.4	2.1	2.2
119-61-9	Benzophenone (Diphenyl methanone)					0.1				0.4	
122-03-2	Benzaldehyde, 4-(1-methylethyl)										
1222-05-5	Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8									0.3	0.5
122-99-6	Ethanol, 2-phenoxy									0.9	0.9
123-05-7	Hexanal, 2-ethyl										
123-11-5	Benzaldehyde, 4-methoxy-	0.5	0.6	0.6	0.5	0.8	0.7	0.5	0.4		
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)	2.5	2.7	2.3	2.4	2.5	2.5	2	2.5	1.9	1.8
123-51-3	1-Butanol, 3-methyl										
123-72-8	Butanal										
123-73-9	2-Butenal, (E)-						0.1	0.1	0.1		
124-07-2	Octanoic Acid									1.7	1.8
124-10-7	Methyl tetradecanoate										0.1
124-11-8	1-Nonene										
124-13-0	Octanal	9.3	11.3	9.2	9.1	9.1	8.9	8	10.2	8.8	9
124-18-5	Decane										
124-19-6	Nonyl aldehyde (Nonanal)	14.7	14.5	14.8	14.7	14.7	13.5	13.6	13.4	16.7	16.8

127-00-4	2-Propanol, 1-chloro										
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
127-51-5	à-Isomethyl ionone										
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)	14.2	15.2	14	14	14.2	13.3	12.2	13.7	9	9.5
13150-81-7	Decane, 2,6-dimethyl	1.1	1.1								
13151-05-8	1-Heptene, 4-methyl										
13151-34-3	Decane, 3-methyl										
13151-35-4	Decane, 5-methyl										
13151-94-5	Cyclooctane, 1,2-dimethyl-										
13287-23-5	Heptadecane, 8-methyl-									0.5	0.6
13466-78-9	3-Carene	4.9	5.2	4.9	4.9	4.8	4.1	7.1	4.6	3.7	4
13475-82-6	Heptane, 2,2,4,6,6-pentamethyl			0.3							
13547-70-1	2-Butanone, 1-chloro-3,3-dimethyl-										
13674-84-5	Tris(1-chloro-2-propyl)phosphate										
137-32-6	1-Butanol, 2-methyl		0.1		0.1						
13851-11-1	Fenchyl acetate				0.4			0.4	0.4		
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)	10.1	10.9	10.6	10.3	11.8	10.2	9.4	9.4	7.9	8.2
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)										
140-67-0	Estragole (4-Allylanisole)	3.3	3.6	3.4	3.4	3.9	3.2	3.1	2.6	3.8	4
141-63-9	Pentasiloxane, dodecamethyl										1.4
141-78-6	Acetate, ethyl	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
142-29-0	Cyclopentene							1.2	1	0.1	0.1
142-62-1	Hexanoic acid					1.8	1.3			3.5	4.1
142-82-5	Heptane										
143-07-7	Dodecanoic acid						0.2	0.1	0.2		
143-08-8	1-Nonanol						1.2	1	1.1		
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl										
1462-03-9	Cyclopentanol, 1-methyl										
14686-13-6	2-Heptene, (E)					0.6	0.5	0.4	0.4		
1472-09-9	Cyclopropane, octyl	0.8							0.7		
1486-51-7	4-Benzyloxybenzoic acid									0.2	0.1
1498-69-7	Anthracene, 9-butyl-										
1503-49-7	4-Cyanobenzophenone	0.1									
1560-88-9	Octadecane, 2-methyl-	0.1	0.3	0.1	0.2		0.2				0.6
1560-89-0	Heptadecane, 2-methyl				0.1	0.2					0.8
1560-92-5	Hexadecane, 2-methyl-				0.1					0.4	0.5
1560-93-6	Pentadecane, 2-methyl			0.1						0.3	0.5
1560-95-8	Tetradecane, 2-methyl										
1560-96-9	Tridecane, 2-methyl										
1560-97-0	Dodecane, 2-methyl										
15798-64-8	2-Butenal, (Z)-										
15869-87-1	Octane, 2,2-dimethyl						0.9	0.8			
15869-94-0	Octane, 3,6-dimethyl	0.3	0.3		0.2	0.3			0.3		
15877-57-3	Pentanal, 3-methyl										
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl	1.5	1.7	2.6	2.6	1.8	1.4	1.3	2.2	1.6	1.7
1640-89-7	Cyclopentane, ethyl										
16728-99-7	Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methyl					0.2					
17302-11-3	Nonane, 3-ethyl										
17302-27-1	Nonane, 2,5-dimethyl										
17302-32-8	Nonane, 3,7-dimethyl										
17302-37-3	Decane, 2,2-dimethyl										
17312-53-7	Decane, 3,6-dimethyl										
17312-54-8	Decane, 3,7-dimethyl-										
17312-57-1	Dodecane, 3-methyl										
17312-80-0	Undecane, 2,4-dimethyl										
17453-93-9	Dodecane, 5-methyl	0.5	0.6	0.5	1.1	1.4					
1757-42-2	Cyclopentanone, 3-methyl	0.6									
17603-57-5	4-Methyl-1,3-heptadiene (c,t)	0.7									
1809-10-5	Pentane, 3-bromo-	0.9	1.5	1.2	1.2	1.7	1.1	1.1	0.7	0.7	0.8
1838-59-1	Formic acid, 2-propenyl ester										
18435-22-8	Tetradecane, 3-methyl										
18435-45-5	1-Nonadecene	0.1	0.6	0.2	0.1	0.5	0.3			0.3	0.6
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate	0.4	0.9	0.7	0.8	1.9	1.1	1	0.5	16	16.6
18794-77-9	Thiophene, 2-hexyl	1.3	1.7	1.3	1.6	2.5	1.6	1.5	0.9		
18968-23-5	Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-, (1à, 3à, 6à)										
19095-23-9	Heptasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13-tetradecamethyl					0.1				0.8	0.9
19095-24-0	Octasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-hexadecar										
1921-70-6	Pentadecane, 2,6,10,14-tetramethyl				0.1						
192823-15-7	Decane, 2,3,5,8-tetramethyl-										
2004-70-8	1,3-Pentadiene, (E)		0.4								
2021-28-5	Benzenepropanoic acid, ethyl ester										
2040-96-2	Cyclopentane, propyl	0.3									
2051-30-1	Octane, 2,6-dimethyl			0.3			0.3				0.2
20521-42-0	2-Butenal, 2-ethenyl										
20959-33-5	Heptadecane, 7-methyl-	0.1				0.1				1	
2116-65-6	Pyridine, 4-(phenylmethyl)-										
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-										
21856-89-3	2-Hexanone, 6-hydroxy-										
2213-23-2	Heptane, 2,4-dimethyl	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	
2213-32-3	1-Pentene, 2,4-dimethyl	0.7	1	0.6	0.7	0.7		0.5	0.6	0.1	0.1
2216-33-3	Octane, 3-methyl	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.5		
24081-57-0	Ketone, 1,5-dimethylbicyclo[2.1.0]pent-5-yl methyl	2.7									
2452-99-5	Cyclopentane, 1,2-dimethyl										
2453-00-1	Cyclopentane, 1,3-dimethyl										
24851-98-7	3-Oxo-2-pentylcyclopentane acetate, methyl (Methyl dihydrojas									0.8	0.8
24903-95-5	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-						0.6	0.6	0.6	0.6	0.6
2497-25-8	2-Decenal, (Z)-	1	1.2	1.1	1	1.5					
25117-26-4	Hexadecane, 4-methyl-									0.3	0.3
25117-31-1	Tridecane, 5-methyl						0.5	0.6	0.4	0.8	1
25117-33-3	Pentadecane, 5-methyl									0.3	
2511-91-3	Cyclopropane, pentyl-							3.1	3		
2548-87-0	2-Octenal, (E)	1.9	1.8	1.7	1.7	3.8	1.7	1.6	1.4	3.5	3.6
26730-20-1	Hexadecane, 7-methyl-				0.1					0.5	0.4
2755-07-9	Undecane, 5-ethyl-5-propyl									0.3	0.3
2758-18-1	2-Cyclopenten-1-one, 3-methyl										
2792-39-4	2,6-Octadiene, 2,6-dimethyl-					1.1					
2801-87-8	Pentadecane, 4-methyl									0.5	0.3
28634-89-1	Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)-	5.7									
287-92-3	Cyclopentane	0.3	0.6			0.5	0.7				
2882-96-4	Pentadecane, 3-methyl		0.4	0.9			0.2	0.6	0.5	0.3	0.3
290-37-9	Pyrazine					0.2	0.1	0.2	0.1	0.1	0.1
29066-34-0	Menthyl acetate										
291-64-5	Cycloheptane										
292-64-8	Cyclooctane										
295-17-0	Cyclotetradecane										
2980-69-0	Undecane, 4-methyl									0.4	0.4
3074-78-0	1-Heptene, 2,6-dimethyl-	0.1									
3208-16-0	Furan, 2-ethyl	0.2	0.2	0.2	0.2	0.2	0.1	0.1		0.1	0.1
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)	0.4	0.5	0.4	0.4	0.6	0.5	0.4	0.3	0.6	0.8
334-48-5	Decanoic acid										1.7
3391-86-4	1-Octen-3-ol									0.8	0.9
3404-61-3	1-Hexene, 3-methyl										
3452-07-1	1-Eicosene		0.3	0.3	0.1	0.2			0.2		
35953-53-8	2-Tetradecene, (E)-									0.7	
36653-82-4	1-Hexadecanol			0.2							
3741-00-2	Cyclopentane, pentyl										
37617-26-8	Cyclopropane, 1-methyl-2-octyl	1.2									

3796-70-1	5,9-Undecadien-2-one, 6,10-dimethyl-, (E)-									0.7	0.6
3839-22-3	o-Cyanobenzoic acid		0.3								
38651-65-9	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-, (1R)-	0.7	0.7	0.7	0.7	0.7					
39029-41-9	Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methyler										
39884-53-2	N-Nitroso-2-methyl-oxazolidine										
40117-45-1	Heptane, 2,2,6,6-tetramethyl										
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl										
4458-32-6	1-Propanamine, N-ethyl-N-methyl										
464-48-2	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)	1.5	1.7	1.6	1.6	1.9					
464-49-3	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1R)						1.6	1.5	1.3	0.9	1
4695-62-9	Fenchone (Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl-)	1.7									
469-61-4	Cedrene, à	0.2	0.3	0.3	0.2	0.4	0.3	0.2	0.1	0.6	0.5
470-40-6	Thujopsene		0.6	0.5	0.4	0.9	0.6	0.5	0.3		
4747-07-3	Hexane, 1-methoxy										
475-20-7	Longifolene	0.1	0.3	0.3	0.1	0.4	0.3	0.2	0.1		
4810-09-7	1-Heptene, 3-methyl										
483-75-0	Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methy	0.3									
489-40-7	1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-										
4914-91-4	2-Pentene, 3,4-dimethyl-, (Z)-	0.2	0.2	0.3	0.2						
4942-47-6	1-Adamantaneacetic acid						0.2			1.1	0.8
500-02-7	2-Cyclohexen-1-one, 4-(1-methylethyl)-									1	
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one										
508-32-7	Tricyclo[2.2.1.02,6]heptane, 1,7,7-trimethyl-		1.2	1.1	1	1.2	1	0.9	1		
5131-66-8	2-Propanol, 1-butoxy	1.1								0.8	0.8
513-35-9	2-Butene, 2-methyl										
515-13-9	Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl), [1S									0.4	0.5
527-53-7	Benzene, 1,2,3,5-tetramethyl								0.7		
534-22-5	Furan, 2-methyl-			0.1		0.1	0.1				
539-90-2	Butanoic acid, 2-methylpropyl ester	0.3	0.6	0.5	0.3	0.7					
540-97-6	Cyclohexasiloxane, dodecamethyl									2.1	2.3
541-01-5	Heptasiloxane, hexadecamethyl-										
541-02-6	Cyclopentasiloxane, decamethyl		2.6	2	2.3	3.3	1.9	1.8		4.9	4.9
541-05-9	Cyclotrisiloxane, hexamethyl										
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate	0.2	0.3		0.1	0.3					
542-28-9	2H-Pyran-2-one, tetrahydro-										
543-49-7	2-Heptanol										
5441-52-1	Cyclohexanol, 3,5-dimethyl						1.5	1	0.5		
544-63-8	Tetradecanoic acid		0.5	0.1	0.1	0.2	0.2		0.2		
544-76-3	Hexadecane (Cetane)	0.1	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.9	1.4
546-28-1	1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methyle										1.5
55030-62-1	Tridecane, 4,8-dimethyl									0.2	
55045-07-3	Dodecane, 2-methyl-8-propyl									0.6	0.6
555-10-2	á-Phellandrene		6	5.8	5.7	6.2	5.6	5.4	5.3	6.2	6.6
556-67-2	Cyclotetrasiloxane, octamethyl	9.5	9.7	9.4	9.4	9.5	6.6	6.4	7.7	6	6.3
556-82-1	2-Buten-1-ol, 3-methyl		0.1		0.1	0.1					
562-49-2	Pentane, 3,3-dimethyl										
56292-65-0	Dodecane, 2,5-dimethyl										
563-80-4	2-Butanone, 3-methyl							0.2	0.2		
56539-66-3	3-Methoxy-3-methylbutanol	9.7	9.9	10.1	9.8	10.5	6.3	6	6.7	6.1	6.5
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-	0.7	0.9	0.7	0.6	1	0.8	0.7	0.6	0.6	0.7
565-59-3	Pentane, 2,3-dimethyl	1	1.2		1		0.4				0.5
565-69-5	3-Pentanone, 2-methyl	0.2				0.2	0.1	0.2	0.2	0.1	0.1
565-75-3	Pentane, 2,3,4-trimethyl										
565-77-5	2-Pentene, 2,3,4-trimethyl					0.7					
565-80-0	3-Pentanone, 2,4-dimethyl	9.3	8.7	9.4	8.6	7.5	7	7.2	8.3		
57-55-6	1,2-Propanediol (Propylene glycol)									0.7	0.9
58-08-2	Caffeine										
585-34-2	Phenol, m-tert-butyl		0.7		0.1	0.5					
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)									0.6	0.8
589-34-4	Hexane, 3-methyl	4.8	6	1.6	5.2	1.7	2.1	0.9	0.8	1.5	1.1
589-35-5	1-Pentanol, 3-methyl										
589-53-7	Heptane, 4-methyl								0.1		
589-81-1	Heptane, 3-methyl										
590-35-2	Pentane, 2,2-dimethyl										
590-73-8	Hexane, 2,2-dimethyl										
591-76-4	Hexane, 2-methyl	3.4	4.1	1.7	3.9	1.5	1.8	0.9	1	1.1	0.8
591-78-6	2-Hexanone	0.7	0.8	0.9	0.8	0.7	0.8	0.7	0.7	0.8	1
592-13-2	Hexane, 2,5-dimethyl		0.2	0.2	0.2						
592-27-8	Heptane, 2-methyl	0.2									
592-41-6	1-Hexene										
592-76-7	1-Heptene						0.1	0.1			
592-77-8	2-Heptene	0.1	0.1	0.1	0.1	0.1					
592-84-7	Formic acid, butyl ester										
593-45-3	Octadecane								0.1	0.7	0.5
598-25-4	1,2-Butadiene, 3-methyl			0.5	0.4	0.5				0.2	
598-61-8	Cyclobutane, methyl			0.3	0.3			0.5	0.8	1.9	1.6
5911-04-6	Nonane, 3-methyl							0.3		0.2	
6094-02-6	1-Hexene, 2-methyl-										
60-12-8	Phenylethyl Alcohol		0.8	0.7							
6032-29-7	2-Pentanol										
60-35-5	Acetamide						0.1				
6044-71-9	Dodecane, 6-methyl										
61141-83-1	Cyclobutane, 1,2-diethyl								0.3	0.1	0.1
6117-97-1	Dodecane, 4-methyl										
6131-25-5	Heptane, 3-methyl										
616-45-5	2-Pyrrolidinone						1.5				
6165-40-8	Pentadecane, 7-methyl-									0.5	0.5
6165-40-8-	Pentadecane, 7-methyl-									0.5	0.5
617-78-7	Pentane, 3-ethyl	0.7	0.8	0.2	0.6	0.2	0.3			0.2	0.4
617-94-7	Benzenemethanol, à,à-dimethyl-	2.2	2.2	2	1.9	2.3	2	1.5	1.6	2.1	2.3
620-14-4	Benzene, 1-ethyl-3-methyl										
62016-14-2	Octane, 2,5,6-trimethyl										
62016-33-5	Octane, 2,3,6-trimethyl	0.3									
62016-37-9	Octane, 2,4,6-trimethyl										
62016-49-3	Butane, 2-methoxy-3-methyl							1.2	1.2		
62108-31-0	Heptane, 4-ethyl-2,2,6,6-tetramethyl										
62108-33-2	3-Octyne, 5-methyl-										
62183-55-5	Octane, 3-ethyl-2,7-dimethyl										
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-										
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)										
624-16-8	4-Decanone						1	0.9			
625-23-0	2-Hexanol, 2-methyl					1.8					
6259-76-3	n-Hexyl salicylate									1.1	1.1
626-93-7	2-Hexanol								0.3		
627-21-4	2-Pentyne										
628-32-0	Propane, 1-ethoxy-		0.1	0.1							
629-15-2	1,2-Ethanediol, diformate									0.1	
629-50-5	Tridecane										
629-62-9	Pentadecane									0.7	0.8
629-78-7	Heptadecane	0.1	0.1	0.1	0.1	0.1			0.1	0.9	0.9
629-80-1	Hexadecanal						0.1				
629-92-5	Nonadecane			0.1	0.1					0.6	0.6
638-04-0	Cyclohexane, c-1,3-dimethyl						0.5	0.5	0.6	0.3	0.3
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-		0.1	0.1	0.2	0.2					
638-49-3	Formic acid, pentyl ester	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.4
6418-41-3	Tridecane, 3-methyl									0.4	
6418-43-5	Hexadecane, 3-methyl			0.1	0.1					0.5	0.5

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6418-44-6	Heptadecane, 3-methyl				0.1	0.2				0.5	1.1
64-19-7	Acetic acid	13.5	13.3	16.2	13.8	10.4	12.5	13.5	10.7	15.1	0.4
645-13-6	Ethanone, 1-[4-(1-methylethyl)phenyl]-		0.1	0.3						0.3	0.4
6508-77-6	6-Tridecene, (Z)-										1.2
65-85-0	Benzoic Acid		1				0.9	1.1		1.1	1.8
66-25-1	Hexanal	22.5	22.7	22.4	22.3	22.5	19.6	19.5	20.3	21.1	22.1
67-63-0	2-Propanol (Isopropanol)			1.4	1.2	1.1					
67-64-1	Acetone	1.5					1.7			7.1	8.6
6765-39-5	1-Heptadecene										
6795-87-5	Butane, 2-methoxy										
68-12-2	Formamide, N,N-dimethyl										
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)			0.1	0.1	0.1				2.1	
6876-23-9	Cyclohexane, t-1,2-dimethyl										
689-67-8	5,9-Undecadien-2-one, 6,10-dimethyl-										
690-08-4	2-Pentene, 4,4-dimethyl, (E)	0.4	0.3		0.3	0.3					
693-54-9	2-Decanone		3	2.7	2.8	3.5	2.7	2.5	2.2	4.4	4.5
6938-94-9	Hexanedioic acid, bis(1-methylethyl) ester								0.1	0.3	0.4
6975-92-4	1-Hexene, 2,5-dimethyl						0.5				
6975-98-0	Decane, 2-methyl							0.4			
7045-71-8	Undecane, 2-methyl										
71-23-8	1-Propanol (Propyl alcohol)										
71-36-3	1-Butanol (N-Butyl alcohol)	1	1.3	1.7	1.3	1.7	1.8	1.6	1.7	0.8	1.1
71-41-0	1-Pentanol (N-Pentyl alcohol)	7	7	7	6.9	6.9	6	5.9	6.3	5.5	6.3
7146-60-3	Octane, 2,3-dimethyl										
71579-69-6	3-Isopropoxy-1,1,1,7,7,7-hexamethyl-3,5,5-tris(trimethylsiloxy)t									1.3	
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)	0.2	0.2	0.4		0.4	0.2	0.3	0.3	1.2	1.5
7206-13-5	2-Dodecene, (E)									1.2	1
7206-26-0	2-Dodecene, (Z)-				0.7						
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl	0.4					0.3				
7446-09-5	Sulfur dioxide										
75-12-7	Formamide (Methanamide)										
75-18-3	Methyl sulfide (Methane, thiobis)										0.1
756-02-5	1,4-Pentadiene, 2,3,3-trimethyl		0.7	0.6	0.8						
761-65-9	Formamide, N,N-dibutyl										
762-63-0	2-Pentene, 4,4-dimethyl-, (Z)-						0.3	0.3	0.3	0.2	0.2
76-49-3	Bicyclo[2.2.1]Heptan-2-ol,1,7,7-trimethyl,acetate,endo(bornyl a										
766-94-9	Benzene, (ethenyloxy)-										
77-53-2	1H-3a,7-Methanoazulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3									1.5	0.9
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	0.7	1.7	1.1	1.3	3.2	1.9	1.7	0.9	15.7	16
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro						0.3	0.1	0.2		
78-78-4	Butane, 2-methyl (Isopentane)	0.5	0.4	0.5	0.4	0.5	0.3	0.3	0.2	0.4	0.3
78-79-5	1,3-Butadiene, 2-methyl	0.3					1.2				0.3
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)	0.2	0.3	0.3	0.3	0.3	0.5	0.5	0.4	0.2	0.2
78-84-2	Propanal, 2-methyl (Isobutanal)	3.6	3.5	3.7	3.4	3.1	2.8	2.8	3.2		
78-85-3	2-Propenal, 2-methyl					0.1	0.1	0.1	0.1	0.1	0.1
78-89-7	1-Propanol, 2-chloro-						0.1	0.1			
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)									0.6	
79-09-4	Propanoic acid	0.5	0.5		0.4		0.5	0.4	0.3		
79-10-7	2-Propenoic acid										
79-20-9	Acetate, methyl (Acetic acid, methyl ester)									0.2	0.2
79-31-2	Propanoic acid, 2-methyl	1.7	1.6	1.8	1.8	1.8	1.3	1.3	1.5	0.7	0.8
79-33-4	(S)-2-Hydroxypropanoic acid						7.3	1.1	5.5	0.8	1.2
80-54-6	Lilial									1	1
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	45.4	46.9	46.1	46.1	46.1	42.1	42	41.6	25.2	27.7
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl este	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80655-44-3	Decahydro-4,4,8,9,10-pentamethylnaphthalene		0.1	0.3	0.1	0.2					
821-95-4	1-Undecene	1.7	1.7	1.6	1.5	1.7	1.4	1.3	1.3	1.1	1.3
822-50-4	Cyclopentane, 1,2-dimethyl, trans										
85-41-6	1H-Isoindole-1,3(2H)-dione				0.1	0.2	0.1				
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)	0.8	0.9	0.5	0.5	0.6	0.4	0.3	0.3		
871-83-0	Nonane, 2-methyl							0.2			
872-05-9	1-Decene						0.5	0.5	0.3	0.4	0.5
872-50-4	2-Pyrrolidinone, 1-methyl										
89-48-5	Menthyl acetate										
90346-45-5	Cyclobutene, 1,2,3,4-tetramethyl-										
91-20-3	Naphthalene	0.8	0.9	0.9					0.3		
91-64-5	Coumarin (2H-1-Benzopyran-2-one)										
922-63-4	2-Ethylacrolein							0.1	0.1		
92-51-3	1,1'-Bicyclohexyl										
930-27-8	Furan, 3-methyl							0.1	0.1		
930-60-9	4-Cyclopentene-1,3-dione										
93-58-3	Benzoic acid, methyl ester										
95-16-9	Benzothiazole	1.1	0.9	0.7	0.8	0.8	0.8	0.6	0.5	1.4	1.7
95-47-6	Xylene, ortho	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.3	0.3
95-93-2	Benzene, 1,2,4,5-tetramethyl	1.1		1.1	1.1	1.4			0.2		
96-14-0	Pentane, 3-methyl										
96-37-7	Cyclopentane, methyl		0.2	0.2	0.2	0.2	0.1	0.1	0.1		0.1
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)										
96-76-4	Phenol, 2,4-bis(1,1-dimethylethyl)-										
97-64-3	Propanoic acid, 2-hydroxy-, ethyl ester		7.9								
97-95-0	1-Butanol, 2-ethyl										
97-96-1	Butanal, 2-ethyl-										0.6
98-01-1	Furfural (2-Furaldehyde)	2.8	2.6	2.6	2.5	2.5	2	2.1	2.2	1.9	2.1
98-19-1	Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl							0.5	0.3	0.8	1.6
98-56-6	Benzene, 1-chloro-4-(trifluoromethyl)-										
98-83-9	à-Methylstyrene (iso-Propenylbenzene; (1-Methylethenyl)benz										
98-86-2	Acetophenone (Ethanone, 1-phenyl)	3.5	3.6	3.3	3.4	4.3	3.3	2.9	2.7		
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-									0.3	0.4
99-62-7	Benzene, 1,3-diisopropyl		0.5		0.3	0.8					

Outside VOC Data

cas_number	chemical	16308-010AA SV11 (11.000) c_522730	16308-010AA SV12 (12.000) c_522731	16308-010AA SV13 (13.000) c_522732	16308-010AA SV14 (14.000) c_522733	16308-010AA SV15 (15.000) c_522734	16308-020AA SV8 (8.000) c_522811	16308-020AA SV9 (9.000) c_522812	16308-020AA SV10 (10.000) c_522813	16308-020AA SV11 (11.000) c_522814	16308-020AA SV12 (12.000) c_522815
		Outside Air									
	Home Identification	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80	Unit 80
	Sample Location	Loc 2A	Loc 2B	Loc 2C	Loc 2D	Loc 2E	Loc 2A	Loc 2B	Loc 2C	Loc 2D	Loc 2E
	Location Description	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside	Outside
	Start-End Times	9:26-13:26	9:26-13:26	9:26-13:26	9:26-13:26	9:26-13:26	16:05-20:05	16:05-20:05	16:05-20:05	16:05-20:05	16:05-20:05
	TVOC (ug/m3)	**22.8**	**26.2**	**22.1**	**22.5**	**21.9**	**20.7**	**10.2**	**10.8**	**18.2**	**18.1**
1000282-73-6	Pentanoic acid, 6-ethyl-3-octyl ester										
1000-86-8	1,3-Pentadiene, 2,4-dimethyl										
1002-43-3	Undecane, 3-methyl				0.1						
100-41-4	Benzene, ethyl	0.2	0.2	0.2	0.3	0.2	0.1	0.2	0.1	0.1	0.2
100-42-5	Styrene	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
100-47-0	Benzonitrile	0.1			0.1						
100-52-7	Benzaldehyde	0.2	0.6	0.8	0.6	0.4	0.1	0.1	0.1		0.5
100-97-0	1,3,5,7-Tetraazatricyclo[3.3.1.13,7]decane (Methenamine)										
10105-38-1	Pentadecane, 6-methyl		0.1			0.1					
101-39-3	Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)										
102-76-1	1,2,3-Propanetriol, triacetate (Triacetin)								0.1	0.1	0.1
103-09-3	Acetic acid, 2-ethylhexyl ester	0.1	0.1			0.1					
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester	0.3					1.5	0.7	0.4	0.2	0.2
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)										
104-67-6	2(3H)-Furanone, 5-heptyldihydro										
10473-13-9	3-Buten-2-ol, 2,3-dimethyl-										
104-76-7	1-Hexanol, 2-ethyl	0.4	0.5	0.4	0.4	0.5	0.3	0.2	0.4	0.4	0.1
10486-19-8	Tridecanal										
10496-18-1	Decyl disulfide										
105-60-2	î-Caprolactam (2H-Azepin-2-one, hexahydro)	0.1								0.1	
106-35-4	3-Heptanone										
106-42-3	Xylene (para and/or meta)	0.3	0.4	0.6	0.4	0.4	0.4	0.5	0.5	0.3	0.4
106-46-7	Benzene, 1,4-dichloro		0.1	0.1	0.1						
106-62-7	1-Propanol, 2-(2-hydroxypropoxy)										
107-02-8	Acrolein (2-Propenal)						0.1	0.1	0.1	0.2	
107-06-2	Ethane, 1,2-dichloro										
1070-66-2	2-n-Butylacrolein										
1071-81-4	Hexane, 2,2,5,5-tetramethyl										
107-21-1	1,2-Ethanediol (Ethylene glycol)										
107-39-1	1-Pentene, 2,4,4-trimethyl		0.1								
107-83-5	Pentane, 2-methyl	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1
107-86-8	2-Butenal, 3-methyl										
107-87-9	2-Pentanone										
107-89-1	Butanal, 3-hydroxy										
107-92-6	Butanoic acid										
108-05-4	Acetate, vinyl (Acetic acid ethenyl ester)										
108-08-7	Pentane, 2,4-dimethyl		0.1	0.1	0.1	0.1	0.1				
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)						0.1	0.1	0.1	0.1	
108-87-2	Cyclohexane, methyl	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.1
108-88-3	Toluene (Methylbenzene)	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5
108-95-2	Phenol										
109-52-4	Pentanoic acid (Valeric acid)										
109-66-0	Pentane										
109-69-3	Butane, 1-chloro										
109-94-4	Formic acid, ethyl ester										
109-99-9	Furan, tetrahydro (THF)										
110-19-0	Acetic acid, 2-methylpropyl ester (Isobutyl acetate)										
110-27-0	Tetradecanoic acid, 1-methylethyl ester (Isopropyl Myristate)										
11028-42-5	Cedrene										
110-43-0	2-Heptanone					0.1					
110-54-3	Hexane			0.2	0.2				0.1		
110-62-3	Pentanal										
110-80-5	Ethanol, 2-ethoxy										
110-82-7	Cyclohexane			0.1			0.1			0.1	
110-86-1	Pyridine	0.1	0.1	0.1	0.1	0.1					
110-87-2	2H-Pyran, 3,4-dihydro										
110-93-0	5-Hepten-2-one, 6-methyl										
111-02-4	2,6,10,14,18,22-Tetracosahexaene, 2,6,10,15,19,23-hexameth	3		0.1		0.1	0.3		0.6	1.5	0.4
111-14-8	Heptanoic acid										
111-27-3	1-Hexanol (N-Hexyl alcohol)										
111-65-9	Octane						0.1				
111-66-0	1-Octene		0.1		0.3						0.1
111-70-6	1-Heptanol										
111-71-7	Heptanal (Heptaldehyde)	0.1	0.1	0.1	0.1	0.1				0.1	
111-76-2	Ethanol, 2-butoxy				0.1						
111-77-3	Ethanol, 2-(2-methoxyethoxy)										
111-84-2	Nonane	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1
111-87-5	1-Octanol										
1120-21-4	Undecane	0.2	0.2	0.2	0.2	0.2					
1120-24-7	1-Decanamine, N,N-dimethyl-										
1120-36-1	1-Tetradecene						0.4				
112-05-0	Nonanoic acid			0.1							
1120-73-6	2-Cyclopenten-1-one, 2-methyl										
112-12-9	2-Undecanone										0.1
1122-82-3	Cyclohexane, isothiocyanato										
112-31-2	Decanal	0.1	0.1	0.1	0.2	0.1		0.1	0.1		0.1
112-34-5	Ethanol, 2-(2-butoxyethoxy)	0.1									
112-40-3	Dodecane	0.1	0.2	0.1	0.1	0.1					
112-41-4	1-Dodecene										
112-44-7	Undecanal	0.6		0.1	0.1	0.1				0.1	
112-54-9	Dodecanal										
112-72-1	1-Tetradecanol										
112-88-9	1-Octadecene										
112-95-8	Eicosane						0.5				
1138-52-9	Phenol, 3,5-bis(1,1-dimethylethyl)-										
115-18-4	3-Buten-2-ol, 2-methyl										
119209-20-0	Decane, 5,6-dipropyl-										
1192-18-3	Cyclopentane, 1,2-dimethyl, cis				0.1					0.1	0.3
1192-33-2	Cyclobutanone, 3,3-dimethyl-										
1195-79-5	Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl										
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-										
119-61-9	Benzophenone (Diphenyl methanone)										
122-03-2	Benzaldehyde, 4-(1-methylethyl)										
1222-05-5	Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8										
122-99-6	Ethanol, 2-phenoxy										
123-05-7	Hexanal, 2-ethyl	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123-11-5	Benzaldehyde, 4-methoxy-										
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)										
123-51-3	1-Butanol, 3-methyl										0.1
123-72-8	Butanal	0.1	0.1	0.1	0.1						
123-73-9	2-Butenal, (E)-										
124-07-2	Octanoic Acid										
124-10-7	Methyl tetradecanoate										
124-11-8	1-Nonene	0.2	0.2	0.1	0.2	0.3	0.3		0.2	0.5	0.3
124-13-0	Octanal		0.1	0.1		0.1	0.1			0.1	
124-18-5	Decane										
124-19-6	Nonyl aldehyde (Nonanal)	0.1	0.1	0.1	0.2		0.1	0.1			

127-00-4	2-Propanol, 1-chloro										
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)	0.1	0.1	0.1	0.1	0.1					
127-51-5	à-Isomethyl ionone										
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)										
13150-81-7	Decane, 2,6-dimethyl										
13151-05-8	1-Heptene, 4-methyl									0.1	
13151-34-3	Decane, 3-methyl				0.2					0.1	
13151-35-4	Decane, 5-methyl										
13151-94-5	Cyclooctane, 1,2-dimethyl-									0.1	
13287-23-5	Heptadecane, 8-methyl-										
13466-78-9	3-Carene										
13475-82-6	Heptane, 2,2,4,6,6-pentamethyl	0.1	0.1		0.5	0.1		0.1	0.1	0.2	0.2
13547-70-1	2-Butanone, 1-chloro-3,3-dimethyl-										
13674-84-5	Tris(1-chloro-2-propyl)phosphate										
137-32-6	1-Butanol, 2-methyl										
13851-11-1	Fenchyl acetate										
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)										
140-67-0	Estragole (4-Allylanisole)										
141-63-9	Pentasiloxane, dodecamethyl										
141-78-6	Acetate, ethyl										
142-29-0	Cyclopentene										
142-62-1	Hexanoic acid		0.6		0.8	0.6					
142-82-5	Heptane	0.8	1.4	0.8	0.7	0.8	0.8	0.4	0.4	0.6	0.5
143-07-7	Dodecanoic acid				0.1						0.1
143-08-8	1-Nonanol										
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl										
1462-03-9	Cyclopentanol, 1-methyl										
14686-13-6	2-Heptene, (E)				0.1	0.1					
1472-09-9	Cyclopropane, octyl										
1486-51-7	4-Benzyloxybenzoic acid										
1498-69-7	Anthracene, 9-butyl-										
1503-49-7	4-Cyanobenzophenone										
1560-88-9	Octadecane, 2-methyl-										
1560-89-0	Heptadecane, 2-methyl										
1560-92-5	Hexadecane, 2-methyl-										
1560-93-6	Pentadecane, 2-methyl						0.3				
1560-95-8	Tetradecane, 2-methyl										
1560-96-9	Tridecane, 2-methyl						0.3				
1560-97-0	Dodecane, 2-methyl									0.2	
15798-64-8	2-Butenal, (Z)-										
15869-87-1	Octane, 2,2-dimethyl										
15869-94-0	Octane, 3,6-dimethyl										
15877-57-3	Pentanal, 3-methyl										
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl										
1640-89-7	Cyclopentane, ethyl	0.1		0.1	0.1	0.1	0.1	0.1	0.1		
16728-99-7	Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methyl										
17302-11-3	Nonane, 3-ethyl										
17302-27-1	Nonane, 2,5-dimethyl										
17302-32-8	Nonane, 3,7-dimethyl	0.2	0.3			0.3					
17302-37-3	Decane, 2,2-dimethyl	0.1									
17312-53-7	Decane, 3,6-dimethyl										
17312-54-8	Decane, 3,7-dimethyl-										
17312-57-1	Dodecane, 3-methyl			0.1					0.3	0.2	
17312-80-0	Undecane, 2,4-dimethyl	0.1									
17453-93-9	Dodecane, 5-methyl										
1757-42-2	Cyclopentanone, 3-methyl										
17603-57-5	4-Methyl-1,3-heptadiene (c,t)										
1809-10-5	Pentane, 3-bromo-										
1838-59-1	Formic acid, 2-propenyl ester										
18435-22-8	Tetradecane, 3-methyl	0.1				0.1					
18435-45-5	1-Nonadecene		0.1		0.1	0.1					0.1
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate						0.3				
18794-77-9	Thiophene, 2-hexyl										
18968-23-5	Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-, (1à, 3à, 6à)										
19095-23-9	Heptasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13-tetradecamethyl										
19095-24-0	Octasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-hexadecar										
1921-70-6	Pentadecane, 2,6,10,14-tetramethyl										
192823-15-7	Decane, 2,3,5,8-tetramethyl-	0.1									
2004-70-8	1,3-Pentadiene, (E)										
2021-28-5	Benzenepropanoic acid, ethyl ester										
2040-96-2	Cyclopentane, propyl										
2051-30-1	Octane, 2,6-dimethyl										
20521-42-0	2-Butenal, 2-ethenyl										
20959-33-5	Heptadecane, 7-methyl-										
2116-65-6	Pyridine, 4-(phenylmethyl)-										
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-										
21856-89-3	2-Hexanone, 6-hydroxy-	0.1									
2213-23-2	Heptane, 2,4-dimethyl								0.1		
2213-32-3	1-Pentene, 2,4-dimethyl										
2216-33-3	Octane, 3-methyl										
24081-57-0	Ketone, 1,5-dimethylbicyclo[2.1.0]pent-5-yl methyl										
2452-99-5	Cyclopentane, 1,2-dimethyl			0.1							
2453-00-1	Cyclopentane, 1,3-dimethyl										
24851-98-7	3-Oxo-2-pentylcyclopentane acetate, methyl (Methyl dihydrojas										
24903-95-5	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-				0.1						
2497-25-8	2-Decenal, (Z)-										
25117-26-4	Hexadecane, 4-methyl-										
25117-31-1	Tridecane, 5-methyl										
25117-33-3	Pentadecane, 5-methyl										
2511-91-3	Cyclopropane, pentyl-										
2548-87-0	2-Octenal, (E)	0.3	0.3	0.3	0.1	0.4					
26730-20-1	Hexadecane, 7-methyl-										
2755-07-9	Undecane, 5-ethyl-5-propyl										
2758-18-1	2-Cyclopenten-1-one, 3-methyl										
2792-39-4	2,6-Octadiene, 2,6-dimethyl-										
2801-87-8	Pentadecane, 4-methyl						0.1				
28634-89-1	Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)-										
287-92-3	Cyclopentane		0.5			0.3	0.2	0.2	0.1	0.6	0.1
2882-96-4	Pentadecane, 3-methyl	0.2	0.7				0.4	0.2			
290-37-9	Pyrazine										
29066-34-0	Menthyl acetate										
291-64-5	Cycloheptane					0.1					
292-64-8	Cyclooctane						0.2	0.1		0.3	0.2
295-17-0	Cyclotetradecane										
2980-69-0	Undecane, 4-methyl										
3074-78-0	1-Heptene, 2,6-dimethyl-										
3208-16-0	Furan, 2-ethyl										
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)										
334-48-5	Decanoic acid		0.1	0.1	0.1	0.1		0.1			0.1
3391-86-4	1-Octen-3-ol										
3404-61-3	1-Hexene, 3-methyl										
3452-07-1	1-Eicosene		0.1								
35953-53-8	2-Tetradecene, (E)-						0.3				
36653-82-4	1-Hexadecanol										
3741-00-2	Cyclopentane, pentyl									0.1	
37617-26-8	Cyclopropane, 1-methyl-2-octyl										
3796-70-1	5,9-Undecadien-2-one, 6,10-dimethyl-, (E)-										

3839-22-3	o-Cyanobenzoic acid										
38651-65-9	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-, (1R)-										
39029-41-9	Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methyler										
39884-53-2	N-Nitroso-2-methyl-oxazolidine										
40117-45-1	Heptane, 2,2,6,6-tetramethyl										
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl										
4458-32-6	1-Propanamine, N-ethyl-N-methyl										
464-48-2	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)										
464-49-3	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1R)										
4695-62-9	Fenchone (Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl-)										
469-61-4	Cedrene, à										
470-40-6	Thujopsene										
4747-07-3	Hexane, 1-methoxy										
475-20-7	Longifolene										
4810-09-7	1-Heptene, 3-methyl										
483-75-0	Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methy										
489-40-7	1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-										
4914-91-4	2-Pentene, 3,4-dimethyl-, (Z)-										
4942-47-6	1-Adamantaneacetic acid										
500-02-7	2-Cyclohexen-1-one, 4-(1-methylethyl)-										
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one									0.1	
508-32-7	Tricyclo[2.2.1.02,6]heptane, 1,7,7-trimethyl-	0.6									
5131-66-8	2-Propanol, 1-butoxy										
513-35-9	2-Butene, 2-methyl										
515-13-9	Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl), [1S										
527-53-7	Benzene, 1,2,3,5-tetramethyl										
534-22-5	Furan, 2-methyl-										
539-90-2	Butanoic acid, 2-methylpropyl ester										
540-97-6	Cyclohexasiloxane, dodecamethyl										
541-01-5	Heptasiloxane, hexadecamethyl-										
541-02-6	Cyclopentasiloxane, decamethyl										
541-05-9	Cyclotrisiloxane, hexamethyl										
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate										
542-28-9	2H-Pyran-2-one, tetrahydro-					0.1					
543-49-7	2-Heptanol			0.2							
5441-52-1	Cyclohexanol, 3,5-dimethyl										
544-63-8	Tetradecanoic acid		0.1	0.1	0.1	0.1					
544-76-3	Hexadecane (Cetane)	0.2					0.3				
546-28-1	1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methyle										
55030-62-1	Tridecane, 4,8-dimethyl										
55045-07-3	Dodecane, 2-methyl-8-propyl										
555-10-2	á-Phellandrene										
556-67-2	Cyclotetrasiloxane, octamethyl	0.6	0.4	0.4	0.4	0.4				0.1	
556-82-1	2-Buten-1-ol, 3-methyl										
562-49-2	Pentane, 3,3-dimethyl				0.1						
56292-65-0	Dodecane, 2,5-dimethyl	0.1									
563-80-4	2-Butanone, 3-methyl										
56539-66-3	3-Methoxy-3-methylbutanol										
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-										
565-59-3	Pentane, 2,3-dimethyl	0.2	0.5	0.4	0.3	0.4	0.6			0.5	
565-69-5	3-Pentanone, 2-methyl										
565-75-3	Pentane, 2,3,4-trimethyl							0.1			
565-77-5	2-Pentene, 2,3,4-trimethyl										
565-80-0	3-Pentanone, 2,4-dimethyl										
57-55-6	1,2-Propanediol (Propylene glycol)										
58-08-2	Caffeine										
585-34-2	Phenol, m-tert-butyl										
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)										
589-34-4	Hexane, 3-methyl	0.8	2.8	1.6	1.2	1.5	2.3	0.5	0.6	1.7	1
589-35-5	1-Pentanol, 3-methyl		0.2								
589-53-7	Heptane, 4-methyl	0.1	0.4	0.1							
589-81-1	Heptane, 3-methyl	0.1	0.1	0.1		0.1	0.1				
590-35-2	Pentane, 2,2-dimethyl										
590-73-8	Hexane, 2,2-dimethyl		0.1			0.1					
591-76-4	Hexane, 2-methyl	1	2.3	1.2	0.9	1.2	1.8	0.9	1	1.4	1.2
591-78-6	2-Hexanone										
592-13-2	Hexane, 2,5-dimethyl			0.1	0.1					0.1	
592-27-8	Heptane, 2-methyl	0.2	0.1	0.1		0.1	0.1			0.1	0.1
592-41-6	1-Hexene	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.2	0.2
592-76-7	1-Heptene	0.4	0.5	0.4	0.5	0.6	0.4	0.2	0.2	0.5	
592-77-8	2-Heptene										
592-84-7	Formic acid, butyl ester	0.1		0.1							
593-45-3	Octadecane										
598-25-4	1,2-Butadiene, 3-methyl										
598-61-8	Cyclobutane, methyl			0.4	0.3						
5911-04-6	Nonane, 3-methyl										
6094-02-6	1-Hexene, 2-methyl-						0.1				
60-12-8	Phenylethyl Alcohol										
6032-29-7	2-Pentanol		0.1		0.2	0.2					
60-35-5	Acetamide										
6044-71-9	Dodecane, 6-methyl			0.1							
61141-83-1	Cyclobutane, 1,2-diethyl										
6117-97-1	Dodecane, 4-methyl									0.1	
6131-25-5	Heptane, 3-methyl	0.1	0.1	0.1		0.1	0.1				
616-45-5	2-Pyrrolidinone										
6165-40-8	Pentadecane, 7-methyl-						0.5				
6165-40-8-	Pentadecane, 7-methyl-						0.5				
617-78-7	Pentane, 3-ethyl	0.1	0.1	0.4	0.2	0.3	0.4	0.1	0.2	0.4	0.2
617-94-7	Benzenemethanol, à,à-dimethyl-	0.3	0.6	0.2	0.4	0.7			0.1	0.2	0.1
620-14-4	Benzene, 1-ethyl-3-methyl										
62016-14-2	Octane, 2,5,6-trimethyl										
62016-33-5	Octane, 2,3,6-trimethyl										
62016-37-9	Octane, 2,4,6-trimethyl						0.1	0.1	0.1	0.1	0.1
62016-49-3	Butane, 2-methoxy-3-methyl										
62108-31-0	Heptane, 4-ethyl-2,2,6,6-tetramethyl			0.2							
62108-33-2	3-Octyne, 5-methyl-	0.2		0.1							
62183-55-5	Octane, 3-ethyl-2,7-dimethyl										
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-	0.4	0.4			0.4	0.1				
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)				0.1	0.2	0.1	0.1	0.1	0.1	0.1
624-16-8	4-Decanone										
625-23-0	2-Hexanol, 2-methyl										
6259-76-3	n-Hexyl salicylate										
626-93-7	2-Hexanol										
627-21-4	2-Pentyne										
628-32-0	Propane, 1-ethoxy-										
629-15-2	1,2-Ethanediol, diformate										
629-50-5	Tridecane			0.1	0.1	0.1					
629-62-9	Pentadecane	0.1				0.1					0.5
629-78-7	Heptadecane										
629-80-1	Hexadecanal										
629-92-5	Nonadecane	0.6					0.3	0.1			
638-04-0	Cyclohexane, c-1,3-dimethyl										
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-										
638-49-3	Formic acid, pentyl ester										
6418-41-3	Tridecane, 3-methyl						0.2				
6418-43-5	Hexadecane, 3-methyl										
6418-44-6	Heptadecane, 3-methyl										
64-19-7	Acetic acid	0.7	0.6	0.6	0.6	0.6			0.1		0.1

Outside VOC Data

645-13-6	Ethanone, 1-[4-(1-methylethyl)phenyl]-										
6508-77-6	6-Tridecene, (Z)-										
65-85-0	Benzoic Acid	0.1	0.1	0.1	0.1	0.1	0.1				0.1
66-25-1	Hexanal	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.2	0.1
67-63-0	2-Propanol (Isopropanol)	0.6									
67-64-1	Acetone	1.1	0.7	0.9	0.7	0.8	0.8	0.5	0.4	1.6	0.7
6765-39-5	1-Heptadecene										
6795-87-5	Butane, 2-methoxy										
68-12-2	Formamide, N,N-dimethyl										
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)										
6876-23-9	Cyclohexane, t-1,2-dimethyl										
689-67-8	5,9-Undecadien-2-one, 6,10-dimethyl-										
690-08-4	2-Pentene, 4,4-dimethyl, (E)										
693-54-9	2-Decanone										
6938-94-9	Hexanedioic acid, bis(1-methylethyl) ester				0.1						
6975-92-4	1-Hexene, 2,5-dimethyl										
6975-98-0	Decane, 2-methyl										
7045-71-8	Undecane, 2-methyl										
71-23-8	1-Propanol (Propyl alcohol)										
71-36-3	1-Butanol (N-Butyl alcohol)				0.2	0.1	0.1	0.1	0.1	0.1	0.1
71-41-0	1-Pentanol (N-Pentyl alcohol)		0.1		0.1	0.1					
7146-60-3	Octane, 2,3-dimethyl										
71579-69-6	3-Isopropoxy-1,1,1,7,7,7-hexamethyl-3,5,5-tris(trimethylsiloxy)t										
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)		0.1	0.1	0.1	0.1					
7206-13-5	2-Dodecene, (E)										
7206-26-0	2-Dodecene, (Z)-										
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl										
7446-09-5	Sulfur dioxide										
75-12-7	Formamide (Methanamide)		1.5	1.9	2.9	1.7					
75-18-3	Methyl sulfide (Methane, thiobis)										
756-02-5	1,4-Pentadiene, 2,3,3-trimethyl										
761-65-9	Formamide, N,N-dibutyl				0.1						
762-63-0	2-Pentene, 4,4-dimethyl-, (Z)-									0.1	
76-49-3	Bicyclo[2.2.1]Heptan-2-ol,1,7,7-trimethyl,acetate,endo(bornyl a										
766-94-9	Benzene, (ethenyloxy)-						0.1	0.2	0.1		0.2
77-53-2	1H-3a,7-Methanoazulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3										
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate						0.3				
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro										
78-78-4	Butane, 2-methyl (Isopentane)	0.5	0.3	0.5	0.4	0.5	0.2	0.1	0.1	0.2	0.2
78-79-5	1,3-Butadiene, 2-methyl	0.4	0.5	0.4	0.3	0.5	0.8	0.8	0.8	0.8	0.7
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)										
78-84-2	Propanal, 2-methyl (Isobutanal)										
78-85-3	2-Propenal, 2-methyl									0.1	
78-89-7	1-Propanol, 2-chloro-										
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)	0.2	0.2			0.2	0.1	0.1		0.2	0.1
79-09-4	Propanoic acid										
79-10-7	2-Propenoic acid										
79-20-9	Acetate, methyl (Acetic acid, methyl ester)										
79-31-2	Propanoic acid, 2-methyl										
79-33-4	(S)-2-Hydroxypropanoic acid							0.2		0.1	2.9
80-54-6	Lilial										
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)		0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl este										
80655-44-3	Decahydro-4,4,8,9,10-pentamethylnaphthalene										
821-95-4	1-Undecene										
822-50-4	Cyclopentane, 1,2-dimethyl, trans										
85-41-6	1H-Isoindole-1,3(2H)-dione										
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)	0.2	0.3	0.6	0.3	0.4					
871-83-0	Nonane, 2-methyl										
872-05-9	1-Decene										
872-50-4	2-Pyrrolidinone, 1-methyl				0.1	0.2					
89-48-5	Menthyl acetate										
90346-45-5	Cyclobutene, 1,2,3,4-tetramethyl-										
91-20-3	Naphthalene	0.1	0.1		0.1	0.1					0.1
91-64-5	Coumarin (2H-1-Benzopyran-2-one)										
922-63-4	2-Ethylacrolein										
92-51-3	1,1'-Bicyclohexyl										
930-27-8	Furan, 3-methyl										
930-60-9	4-Cyclopentene-1,3-dione	0.1			0.1						
93-58-3	Benzoic acid, methyl ester	0.1	0.1	0.1	0.1	0.1					
95-16-9	Benzothiazole	0.1	0.1	0.4	0.1	0.1	0.2	0.1	0.1	0.1	0.1
95-47-6	Xylene, ortho	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
95-93-2	Benzene, 1,2,4,5-tetramethyl									0.1	0.1
96-14-0	Pentane, 3-methyl										
96-37-7	Cyclopentane, methyl	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)	0.1	0.1	0.1	0.1						
96-76-4	Phenol, 2,4-bis(1,1-dimethylethyl)-										
97-64-3	Propanoic acid, 2-hydroxy-, ethyl ester								0.1		
97-95-0	1-Butanol, 2-ethyl										
97-96-1	Butanal, 2-ethyl-										
98-01-1	Furfural (2-Furaldehyde)										
98-19-1	Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl										
98-56-6	Benzene, 1-chloro-4-(trifluoromethyl)-	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2
98-83-9	à-Methylstyrene (iso-Propenylbenzene; (1-Methylethenyl)benz	1.2	1.2	1.3	1.1	0.9	0.8	0.8	0.8	0.7	2.4
98-86-2	Acetophenone (Ethanone, 1-phenyl)	1.3	1.4	1.1	1	1	0.7	0.5	0.6	0.6	0.6
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-										
99-62-7	Benzene, 1,3-diisopropyl										

Blanks VOC Data

cas_number	chemical	16308-010AA SV0F (19.000) c_522735	16308-010AA SV1F (20.000) c_522736	16308-020AA SV0F (13.000) c_522802	16308-020AA SV1F (14.000) c_522804
	Home Identification				
	Sample Location	Blank	Blank	Blank	Blank
	Location Description				
	Start-End Times	AM	AM	PM	PM
	TVOC (ug/m3)	**36.6**	**13.2**	**4.7**	**9.6**
1000282-73-6	Pentanoic acid, 6-ethyl-3-octyl ester				
1000-86-8	1,3-Pentadiene, 2,4-dimethyl				
1002-43-3	Undecane, 3-methyl				
100-41-4	Benzene, ethyl		0.1		0.1
100-42-5	Styrene		0.1		0.3
100-47-0	Benzonitrile				
100-52-7	Benzaldehyde	0.1	0.1	0.1	0.1
100-97-0	1,3,5,7-Tetraazatricyclo[3.3.1.13,7]decane (Methenamine)				
10105-38-1	Pentadecane, 6-methyl		0.1		
101-39-3	Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)				
102-76-1	1,2,3-Propanetriol, triacetate (Triacetin)				
103-09-3	Acetic acid, 2-ethylhexyl ester				
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester			0.2	0.3
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)				
104-67-6	2(3H)-Furanone, 5-heptyldihydro				
10473-13-9	3-Buten-2-ol, 2,3-dimethyl-				
104-76-7	1-Hexanol, 2-ethyl	0.2		0.1	0.1
10486-19-8	Tridecanal				
10496-18-1	Decyl disulfide				
105-60-2	î-Caprolactam (2H-Azepin-2-one, hexahydro)				
106-35-4	3-Heptanone	0.1			
106-42-3	Xylene (para and/or meta)				
106-46-7	Benzene, 1,4-dichloro				
106-62-7	1-Propanol, 2-(2-hydroxypropoxy)				
107-02-8	Acrolein (2-Propenal)			0.1	
107-06-2	Ethane, 1,2-dichloro				
1070-66-2	2-n-Butylacrolein				
1071-81-4	Hexane, 2,2,5,5-tetramethyl				
107-21-1	1,2-Ethanediol (Ethylene glycol)				
107-39-1	1-Pentene, 2,4,4-trimethyl				
107-83-5	Pentane, 2-methyl				
107-86-8	2-Butenal, 3-methyl				
107-87-9	2-Pentanone				
107-89-1	Butanal, 3-hydroxy				
107-92-6	Butanoic acid				
108-05-4	Acetate, vinyl (Acetic acid ethenyl ester)				
108-08-7	Pentane, 2,4-dimethyl	0.4	0.1	0.1	0.1
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)			0.1	0.1
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)				
108-87-2	Cyclohexane, methyl	1.1	0.3	0.2	0.2
108-88-3	Toluene (Methylbenzene)	0.1	0.1	0.1	0.1
108-95-2	Phenol	0.1	0.1		0.1
109-52-4	Pentanoic acid (Valeric acid)				
109-66-0	Pentane	0.6			
109-69-3	Butane, 1-chloro				
109-94-4	Formic acid, ethyl ester				
109-99-9	Furan, tetrahydro (THF)				
110-19-0	Acetic acid, 2-methylpropyl ester (Isobutyl acetate)				
110-27-0	Tetradecanoic acid, 1-methylethyl ester (Isopropyl Myristate)	0.1			
11028-42-5	Cedrene				
110-43-0	2-Heptanone				
110-54-3	Hexane	0.1	0.1		
110-62-3	Pentanal				
110-80-5	Ethanol, 2-ethoxy				
110-82-7	Cyclohexane	0.5	0.1	0.1	0.1
110-86-1	Pyridine				
110-87-2	2H-Pyran, 3,4-dihydro				
110-93-0	5-Hepten-2-one, 6-methyl	0.1			
111-02-4	2,6,10,14,18,22-Tetracosahexaene, 2,6,10,15,19,23-hexamethy				
111-14-8	Heptanoic acid				
111-27-3	1-Hexanol (N-Hexyl alcohol)				
111-65-9	Octane				
111-66-0	1-Octene				
111-70-6	1-Heptanol				
111-71-7	Heptanal (Heptaldehyde)		0.1		

111-76-2	Ethanol, 2-butoxy				
111-77-3	Ethanol, 2-(2-methoxyethoxy)				
111-84-2	Nonane				
111-87-5	1-Octanol				
1120-21-4	Undecane		0.1		
1120-24-7	1-Decanamine, N,N-dimethyl-				0.1
1120-36-1	1-Tetradecene				
112-05-0	Nonanoic acid				
1120-73-6	2-Cyclopenten-1-one, 2-methyl				
112-12-9	2-Undecanone				
1122-82-3	Cyclohexane, isothiocyanato				
112-31-2	Decanal	0.1	0.1		
112-34-5	Ethanol, 2-(2-butoxyethoxy)			0.1	
112-40-3	Dodecane		0.1		
112-41-4	1-Dodecene				
112-44-7	Undecanal				
112-54-9	Dodecanal				
112-72-1	1-Tetradecanol				
112-88-9	1-Octadecene				
112-95-8	Eicosane				
1138-52-9	Phenol, 3,5-bis(1,1-dimethylethyl)-				
115-18-4	3-Buten-2-ol, 2-methyl				
119209-20-0	Decane, 5,6-dipropyl-				
1192-18-3	Cyclopentane, 1,2-dimethyl, cis				
1192-33-2	Cyclobutanone, 3,3-dimethyl-				
1195-79-5	Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl				
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-				
119-61-9	Benzophenone (Diphenyl methanone)				
122-03-2	Benzaldehyde, 4-(1-methylethyl)				
1222-05-5	Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-				
122-99-6	Ethanol, 2-phenoxy				
123-05-7	Hexanal, 2-ethyl	0.1			
123-11-5	Benzaldehyde, 4-methoxy-				
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)				
123-51-3	1-Butanol, 3-methyl				
123-72-8	Butanal				
123-73-9	2-Butenal, (E)-				
124-07-2	Octanoic Acid				
124-10-7	Methyl tetradecanoate				
124-11-8	1-Nonene		0.1		
124-13-0	Octanal	0.1	0.1		
124-18-5	Decane	0.1	0.1		
124-19-6	Nonyl aldehyde (Nonanal)	0.1	0.1		
127-00-4	2-Propanol, 1-chloro				
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)				
127-51-5	à-Isomethyl ionone				
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)				
13150-81-7	Decane, 2,6-dimethyl				
13151-05-8	1-Heptene, 4-methyl	0.1			
13151-34-3	Decane, 3-methyl				
13151-35-4	Decane, 5-methyl				
13151-94-5	Cyclooctane, 1,2-dimethyl-				
13287-23-5	Heptadecane, 8-methyl-				
13466-78-9	3-Carene				
13475-82-6	Heptane, 2,2,4,6,6-pentamethyl				
13547-70-1	2-Butanone, 1-chloro-3,3-dimethyl-				
13674-84-5	Tris(1-chloro-2-propyl)phosphate				
137-32-6	1-Butanol, 2-methyl				
13851-11-1	Fenchyl acetate				
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)				
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)				
140-67-0	Estragole (4-Allylanisole)				
141-63-9	Pentasiloxane, dodecamethyl				
141-78-6	Acetate, ethyl				
142-29-0	Cyclopentene				
142-62-1	Hexanoic acid				
142-82-5	Heptane	3.1	0.8	0.3	0.6
143-07-7	Dodecanoic acid				
143-08-8	1-Nonanol				
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl				
1462-03-9	Cyclopentanol, 1-methyl				
14686-13-6	2-Heptene, (E)				
1472-09-9	Cyclopropane, octyl				
1486-51-7	4-Benzyloxybenzoic acid				

1498-69-7	Anthracene, 9-butyl-				
1503-49-7	4-Cyanobenzophenone				
1560-88-9	Octadecane, 2-methyl-				
1560-89-0	Heptadecane, 2-methyl				
1560-92-5	Hexadecane, 2-methyl-				
1560-93-6	Pentadecane, 2-methyl				
1560-95-8	Tetradecane, 2-methyl				
1560-96-9	Tridecane, 2-methyl				
1560-97-0	Dodecane, 2-methyl				
15798-64-8	2-Butenal, (Z)-				
15869-87-1	Octane, 2,2-dimethyl				
15869-94-0	Octane, 3,6-dimethyl				
15877-57-3	Pentanal, 3-methyl				
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl				
1640-89-7	Cyclopentane, ethyl	0.4	0.1		0.1
16728-99-7	Naphthalene, 1,2,3,4,4a,7-hexahydro-1,6-dimethyl-4-(1-methyle				
17302-11-3	Nonane, 3-ethyl				
17302-27-1	Nonane, 2,5-dimethyl				
17302-32-8	Nonane, 3,7-dimethyl				
17302-37-3	Decane, 2,2-dimethyl				
17312-53-7	Decane, 3,6-dimethyl				
17312-54-8	Decane, 3,7-dimethyl-				
17312-57-1	Dodecane, 3-methyl				
17312-80-0	Undecane, 2,4-dimethyl				
17453-93-9	Dodecane, 5-methyl				
1757-42-2	Cyclopentanone, 3-methyl				
17603-57-5	4-Methyl-1,3-heptadiene (c,t)				
1809-10-5	Pentane, 3-bromo-				
1838-59-1	Formic acid, 2-propenyl ester				
18435-22-8	Tetradecane, 3-methyl		0.1		
18435-45-5	1-Nonadecene				
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate				
18794-77-9	Thiophene, 2-hexyl				
18968-23-5	Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-, (1à, 3à, 6à)				
19095-23-9	Heptasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13-tetradecamethyl				
19095-24-0	Octasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-hexadecam	0.1			
1921-70-6	Pentadecane, 2,6,10,14-tetramethyl				
192823-15-7	Decane, 2,3,5,8-tetramethyl-				
2004-70-8	1,3-Pentadiene, (E)				
2021-28-5	Benzenepropanoic acid, ethyl ester				
2040-96-2	Cyclopentane, propyl				
2051-30-1	Octane, 2,6-dimethyl				
20521-42-0	2-Butenal, 2-ethenyl				
20959-33-5	Heptadecane, 7-methyl-				
2116-65-6	Pyridine, 4-(phenylmethyl)-				
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-				
21856-89-3	2-Hexanone, 6-hydroxy-				
2213-23-2	Heptane, 2,4-dimethyl				
2213-32-3	1-Pentene, 2,4-dimethyl				
2216-33-3	Octane, 3-methyl				
24081-57-0	Ketone, 1,5-dimethylbicyclo[2.1.0]pent-5-yl methyl				
2452-99-5	Cyclopentane, 1,2-dimethyl				
2453-00-1	Cyclopentane, 1,3-dimethyl				
24851-98-7	3-Oxo-2-pentylcyclopentane acetate, methyl (Methyl dihydrojasr				
24903-95-5	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-				
2497-25-8	2-Decenal, (Z)-				
25117-26-4	Hexadecane, 4-methyl-				
25117-31-1	Tridecane, 5-methyl				
25117-33-3	Pentadecane, 5-methyl				
2511-91-3	Cyclopropane, pentyl-				
2548-87-0	2-Octenal, (E)				
26730-20-1	Hexadecane, 7-methyl-				
2755-07-9	Undecane, 5-ethyl-5-propyl				
2758-18-1	2-Cyclopenten-1-one, 3-methyl				
2792-39-4	2,6-Octadiene, 2,6-dimethyl-				
2801-87-8	Pentadecane, 4-methyl				
28634-89-1	Bicyclo[3.1.0]hex-2-ene, 4-methyl-1-(1-methylethyl)-				
287-92-3	Cyclopentane	0.2		0.1	0.1
2882-96-4	Pentadecane, 3-methyl				
290-37-9	Pyrazine				
29066-34-0	Menthyl acetate				
291-64-5	Cycloheptane				
292-64-8	Cyclooctane				
295-17-0	Cyclotetradecane				

2980-69-0	Undecane, 4-methyl				
3074-78-0	1-Heptene, 2,6-dimethyl-				
3208-16-0	Furan, 2-ethyl				
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)				
334-48-5	Decanoic acid				
3391-86-4	1-Octen-3-ol				
3404-61-3	1-Hexene, 3-methyl	0.3	0.1		0.1
3452-07-1	1-Eicosene				
35953-53-8	2-Tetradecene, (E)-				
36653-82-4	1-Hexadecanol				
3741-00-2	Cyclopentane, pentyl				
37617-26-8	Cyclopropane, 1-methyl-2-octyl				
3796-70-1	5,9-Undecadien-2-one, 6,10-dimethyl-, (E)-				
3839-22-3	o-Cyanobenzoic acid				
38651-65-9	Bicyclo[3.1.1]heptan-2-one, 6,6-dimethyl-, (1R)-				
39029-41-9	Naphthalene, 1,2,3,4,4a,5,6,8a-octahydro-7-methyl-4-methylene				
39884-53-2	N-Nitroso-2-methyl-oxazolidine				
40117-45-1	Heptane, 2,2,6,6-tetramethyl				
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl				
4458-32-6	1-Propanamine, N-ethyl-N-methyl				
464-48-2	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)				
464-49-3	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1R)				
4695-62-9	Fenchone (Bicyclo[2.2.1]heptan-2-one, 1,3,3-trimethyl-)				
469-61-4	Cedrene, à				
470-40-6	Thujopsene				
4747-07-3	Hexane, 1-methoxy				
475-20-7	Longifolene				
4810-09-7	1-Heptene, 3-methyl				
483-75-0	Naphthalene, 1,2,4a,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methyl				
489-40-7	1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-te				
4914-91-4	2-Pentene, 3,4-dimethyl-, (Z)-				
4942-47-6	1-Adamantaneacetic acid				
500-02-7	2-Cyclohexen-1-one, 4-(1-methylethyl)-				
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one				
508-32-7	Tricyclo[2.2.1.02,6]heptane, 1,7,7-trimethyl-				
5131-66-8	2-Propanol, 1-butoxy				
513-35-9	2-Butene, 2-methyl				
515-13-9	Cyclohexane, 1-ethenyl-1-methyl-2,4-bis(1-methylethenyl), [1S-(				
527-53-7	Benzene, 1,2,3,5-tetramethyl				
534-22-5	Furan, 2-methyl-				
539-90-2	Butanoic acid, 2-methylpropyl ester				
540-97-6	Cyclohexasiloxane, dodecamethyl				
541-01-5	Heptasiloxane, hexadecamethyl-	0.1			
541-02-6	Cyclopentasiloxane, decamethyl		0.1		
541-05-9	Cyclotrisiloxane, hexamethyl				
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate				
542-28-9	2H-Pyran-2-one, tetrahydro-				
543-49-7	2-Heptanol				
5441-52-1	Cyclohexanol, 3,5-dimethyl				
544-63-8	Tetradecanoic acid				
544-76-3	Hexadecane (Cetane)		0.2		
546-28-1	1H-3a,7-Methanoazulene, octahydro-3,8,8-trimethyl-6-methylen				
55030-62-1	Tridecane, 4,8-dimethyl				
55045-07-3	Dodecane, 2-methyl-8-propyl				
555-10-2	á-Phellandrene				
556-67-2	Cyclotetrasiloxane, octamethyl				
556-82-1	2-Buten-1-ol, 3-methyl				
562-49-2	Pentane, 3,3-dimethyl	0.2	0.1	0.1	0.1
56292-65-0	Dodecane, 2,5-dimethyl				
563-80-4	2-Butanone, 3-methyl				
56539-66-3	3-Methoxy-3-methylbutanol				
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-				
565-59-3	Pentane, 2,3-dimethyl	2.6	0.9	0.4	0.7
565-69-5	3-Pentanone, 2-methyl				
565-75-3	Pentane, 2,3,4-trimethyl				
565-77-5	2-Pentene, 2,3,4-trimethyl				
565-80-0	3-Pentanone, 2,4-dimethyl	0.1			
57-55-6	1,2-Propanediol (Propylene glycol)				
58-08-2	Caffeine				
585-34-2	Phenol, m-tert-butyl				
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)				
589-34-4	Hexane, 3-methyl	12.3	3.5	1.3	2.8
589-35-5	1-Pentanol, 3-methyl				
589-53-7	Heptane, 4-methyl				

589-81-1	Heptane, 3-methyl	0.1			
590-35-2	Pentane, 2,2-dimethyl		0.1		0.1
590-73-8	Hexane, 2,2-dimethyl				
591-76-4	Hexane, 2-methyl	7.9	2.2	0.8	1.8
591-78-6	2-Hexanone				
592-13-2	Hexane, 2,5-dimethyl	0.1			
592-27-8	Heptane, 2-methyl				
592-41-6	1-Hexene				
592-76-7	1-Heptene	0.7	0.2	0.1	0.2
592-77-8	2-Heptene				
592-84-7	Formic acid, butyl ester				
593-45-3	Octadecane				
598-25-4	1,2-Butadiene, 3-methyl				
598-61-8	Cyclobutane, methyl		0.4		
5911-04-6	Nonane, 3-methyl				
6094-02-6	1-Hexene, 2-methyl-				
60-12-8	Phenylethyl Alcohol				
6032-29-7	2-Pentanol				
60-35-5	Acetamide				
6044-71-9	Dodecane, 6-methyl				
61141-83-1	Cyclobutane, 1,2-diethyl				
6117-97-1	Dodecane, 4-methyl				
6131-25-5	Heptane, 3-methyl	0.1			
616-45-5	2-Pyrrolidinone				
6165-40-8	Pentadecane, 7-methyl-		0.2		
6165-40-8-	Pentadecane, 7-methyl-		0.2		
617-78-7	Pentane, 3-ethyl	2.3	0.7	0.3	0.5
617-94-7	Benzenemethanol, à,à-dimethyl-				
620-14-4	Benzene, 1-ethyl-3-methyl				
62016-14-2	Octane, 2,5,6-trimethyl				
62016-33-5	Octane, 2,3,6-trimethyl				
62016-37-9	Octane, 2,4,6-trimethyl				
62016-49-3	Butane, 2-methoxy-3-methyl				
62108-31-0	Heptane, 4-ethyl-2,2,6,6-tetramethyl				
62108-33-2	3-Octyne, 5-methyl-				
62183-55-5	Octane, 3-ethyl-2,7-dimethyl				
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-				
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)				
624-16-8	4-Decanone				
625-23-0	2-Hexanol, 2-methyl				
6259-76-3	n-Hexyl salicylate				
626-93-7	2-Hexanol				
627-21-4	2-Pentyne				
628-32-0	Propane, 1-ethoxy-				
629-15-2	1,2-Ethanediol, diformate				
629-50-5	Tridecane				
629-62-9	Pentadecane		0.3		
629-78-7	Heptadecane				
629-80-1	Hexadecanal				
629-92-5	Nonadecane		0.2		
638-04-0	Cyclohexane, c-1,3-dimethyl				
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-				
638-49-3	Formic acid, pentyl ester				
6418-41-3	Tridecane, 3-methyl				
6418-43-5	Hexadecane, 3-methyl				
6418-44-6	Heptadecane, 3-methyl				
64-19-7	Acetic acid	0.1			
645-13-6	Ethanone, 1-[4-(1-methylethyl)phenyl]-				
6508-77-6	6-Tridecene, (Z)-				
65-85-0	Benzoic Acid				
66-25-1	Hexanal		0.1		
67-63-0	2-Propanol (Isopropanol)				
67-64-1	Acetone		0.4	0.4	0.8
6765-39-5	1-Heptadecene				
6795-87-5	Butane, 2-methoxy				
68-12-2	Formamide, N,N-dimethyl				
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)				
6876-23-9	Cyclohexane, t-1,2-dimethyl				
689-67-8	5,9-Undecadien-2-one, 6,10-dimethyl-		0.1		
690-08-4	2-Pentene, 4,4-dimethyl, (E)				
693-54-9	2-Decanone				
6938-94-9	Hexanedioic acid, bis(1-methylethyl) ester				
6975-92-4	1-Hexene, 2,5-dimethyl				
6975-98-0	Decane, 2-methyl				

7045-71-8	Undecane, 2-methyl				
71-23-8	1-Propanol (Propyl alcohol)	0.1	0.2		
71-36-3	1-Butanol (N-Butyl alcohol)				
71-41-0	1-Pentanol (N-Pentyl alcohol)				
7146-60-3	Octane, 2,3-dimethyl				
71579-69-6	3-Isopropoxy-1,1,1,7,7,7-hexamethyl-3,5,5-tris(trimethylsiloxy)te				
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)	0.1		0.1	
7206-13-5	2-Dodecene, (E)				
7206-26-0	2-Dodecene, (Z)-				
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl				
7446-09-5	Sulfur dioxide				
75-12-7	Formamide (Methanamide)				
75-18-3	Methyl sulfide (Methane, thiobis)				
756-02-5	1,4-Pentadiene, 2,3,3-trimethyl				
761-65-9	Formamide, N,N-dibutyl				
762-63-0	2-Pentene, 4,4-dimethyl-, (Z)-				
76-49-3	Bicyclo[2.2.1]Heptan-2-ol,1,7,7-trimethyl,acetate,endo(bornyl ac				
766-94-9	Benzene, (ethenyloxy)-				
77-53-2	1H-3a,7-Methanoazulen-6-ol, octahydro-3,6,8,8-tetramethyl-, [3I				
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate				
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro				
78-78-4	Butane, 2-methyl (Isopentane)	0.7	0.2	0.1	0.1
78-79-5	1,3-Butadiene, 2-methyl				
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)				
78-84-2	Propanal, 2-methyl (Isobutanal)				
78-85-3	2-Propenal, 2-methyl				
78-89-7	1-Propanol, 2-chloro-				
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)				
79-09-4	Propanoic acid				
79-10-7	2-Propenoic acid				
79-20-9	Acetate, methyl (Acetic acid, methyl ester)				
79-31-2	Propanoic acid, 2-methyl				
79-33-4	(S)-2-Hydroxypropanoic acid				
80-54-6	Lilial				
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	0.1			
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)				
80655-44-3	Decahydro-4,4,8,9,10-pentamethylnaphthalene				
821-95-4	1-Undecene				
822-50-4	Cyclopentane, 1,2-dimethyl, trans				
85-41-6	1H-Isoindole-1,3(2H)-dione				
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)	0.2	0.2		
871-83-0	Nonane, 2-methyl				
872-05-9	1-Decene				
872-50-4	2-Pyrrolidinone, 1-methyl				
89-48-5	Menthyl acetate				
90346-45-5	Cyclobutene, 1,2,3,4-tetramethyl-				
91-20-3	Naphthalene				
91-64-5	Coumarin (2H-1-Benzopyran-2-one)				
922-63-4	2-Ethylacrolein				
92-51-3	1,1'-Bicyclohexyl				
930-27-8	Furan, 3-methyl				
930-60-9	4-Cyclopentene-1,3-dione				
93-58-3	Benzoic acid, methyl ester				
95-16-9	Benzothiazole	0.1	0.1		0.1
95-47-6	Xylene, ortho				
95-93-2	Benzene, 1,2,4,5-tetramethyl				
96-14-0	Pentane, 3-methyl	0.1			
96-37-7	Cyclopentane, methyl	0.9	0.3	0.1	0.2
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)				
96-76-4	Phenol, 2,4-bis(1,1-dimethylethyl)-				
97-64-3	Propanoic acid, 2-hydroxy-, ethyl ester				
97-95-0	1-Butanol, 2-ethyl				
97-96-1	Butanal, 2-ethyl-				
98-01-1	Furfural (2-Furaldehyde)				
98-19-1	Benzene, 1-(1,1-dimethylethyl)-3,5-dimethyl				
98-56-6	Benzene, 1-chloro-4-(trifluoromethyl)-				
98-83-9	à-Methylstyrene (iso-Propenylbenzene; (1-Methylethenyl)benzer				
98-86-2	Acetophenone (Ethanone, 1-phenyl)	0.1			
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-				
99-62-7	Benzene, 1,3-diisopropyl				

Appendix F

Units 90 & 91 Volatile Organic Compound Results

Unit 90 VOC Data

cas_number	chemical	510	16339-030AA SV1 (1.000) c_526156	16339-030AA SV2 (2.000) c_526157	16339-030AA SV3 (3.000) c_526158	16339-030AA SV4 (4.000) c_526159	16339-030AA SV5 (5.000) c_526160	16339-030AA SV6 (6.000) c_526161	16339-040AA SV1 (1.000) c_526167	16339-040AA SV2 (2.000) c_526168	16339-040AA SV3 (3.000) c_526169	16339-040AA SV4 (4.000) c_526170	16339-040AA SV5 (5.000) c_526171	16339-040AA SV6 (6.000) c_526172
								Test Home						
	Home Identification		Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90
	Sample Location		Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2
	Location Description		2nd FL LR	2nd FL LR	2nd FL LR	2nd FL LR	2nd FL LR	2nd FL LR	1st FL BR	1st FL BR	1st FL BR	1st FL BR	1st FL BR	1st FL BR
	Start-End Times		11:35-15:35	15:35-19:30	19:30-23:45	23:45-03:50	03:50-07:35	07:35-12:40	11:35-15:35	15:35-19:25	19:25-23:45	23:45-03:30	03:30-07:35	07:35-12:15
	TVOC (ug/m3)		**348**	**330**	**343**	**338**	**354**	**389**	**414**	**404**	**417**	**414**	**376**	**421**
100-18-5	Benzene, 1,4-bis(1-methylethyl)-													
100-41-4	Benzene, ethyl		2.7	2.4	2.7	2.2	2.8	2.8	3	2.5	2.7	2.8	3.3	3.6
100-42-5	Styrene		4.9	4.1	4.7	4	4.5	4.4	5	4.4	4.6	4.4	4.5	4.7
100-52-7	Benzaldehyde		4.2	4	3.4	2.8	3.2	3.2	3.6	3.4	3.5	3.4	4.5	3.7
1000131-87-	Propanal, 2-methyl-3-phenyl-													
1000131-87-6	Propanal, 2-methyl-3-phenyl-													
1000299-11-8	Butanoic acid, 3-methylbut-2-enyl ester		0.4	0.5	0.4		0.4	0.9	0.7	0.6	0.8	0.7	0.6	0.6
1000350-93-6	1,3,5-Triazine-2(1H)-thione, tetrahydro-5-[(4-methoxyphenyl)													
1003-19-6	Cyclopropane, 1,1-diethyl													
101-84-8	Benzene, 1,1'-oxybis- (Diphenyl ether)									0.5	0.4	0.5		0.4
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (Octyl acrylate)								1	0.9	0.9	1.4	0.9	1
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester													
103-65-1	Benzene, propyl													
103-70-8	Formamide, N-phenyl-													
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)													
104-76-7	1-Hexanol, 2-ethyl		8	7.2	8.1	6.7	7.8	7.9	9.1	8.3	8.6	8.4	8.5	9.1
105-82-8	Propane, 1,1'-[ethylidenebis(oxy)]bis								0.1	0.2	0.1	0.2	0.2	0.2
10574-36-4	2-Hexene, 3-methyl-, (Z)													
10574-37-5	2-Pentene, 2,3-dimethyl		0.2	0.3										
106-42-3	Xylene (para and/or meta)		4.7		4.7	4.3	5.2	5.3	5.4	4.8	5.2	5.4	5.8	6.8
106-46-7	Benzene, 1,4-dichloro		0.8	0.7	0.8	0.6	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.9
107-02-8	Acrolein (2-Propenal)													
107-06-2	Ethane, 1,2-dichloro		0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
107-13-1	2-Propenenitrile (Acrylonitrile)							0.1						0.1
107-21-1	1,2-Ethanediol (Ethylene glycol)		2.1			0.4	3	1.4		1.1	1.3	1.4	1	
107-83-5	Pentane, 2-methyl		0.3	0.3	0.3	0.2	0.4	0.3					0.3	0.4
107-87-9	2-Pentanone		0.8	0.7	0.7	0.7	0.9	0.8	0.8	0.7	0.7	0.8	0.9	0.8
107-92-6	Butanoic acid				0.2			0.3					0.3	0.3
1070-66-2	2-n-Butylacrolein		0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1071-81-4	Hexane, 2,2,5,5-tetramethyl													
1072-05-5	Heptane, 2,6-dimethyl													
1074-17-5	Benzene, 1-methyl-2-propyl			1.6		1.5	1.6							
1074-43-7	Benzene, 1-methyl-3-propyl													
1074-55-1	Benzene, 1-methyl-4-propyl													
1075-22-5	1H-Indene, 2,3-dihydro-5,6-dimethyl				0.3									
108-08-7	Pentane, 2,4-dimethyl		0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.3	0.3	1.4
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)		1.5	1.4	1.5	1.3	1.6	3.5	1.5	1.5	1.5	2.3	1.7	4
108-38-3	Xylene (meta and/or para)			4										
108-65-6	1-Methoxy-2-propyl acetate		3.9	3.6	2.3	1.9	2.2	2.2	2.8	2.7	3	2.8	2.9	3
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)													
108-87-2	Cyclohexane, methyl		3.4	3.3	3.5	3	3.1	2.6	4.4	2.9	2.6	2.8	3	2.9
108-88-3	Toluene (Methylbenzene)		6.5	5.3	6	5.5	7	6.4	7.2	5.8	6.1	6.2	6.9	7.6
109-08-0	Pyrazine, methyl		0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.5
109-60-4	Acetic acid, propyl ester (Propyl acetate)		0.3	0.3	0.3	0.3	0.3		0.3	0.3	0.3	0.3	0.3	
109-66-0	Pentane		1.1	0.1			1.5							1.9
109-68-2	2-Pentene													
110-43-0	2-Heptanone		2.1	1.9	2.2	1.8	2.1	2.1	2.4	2.3	2.3	2.3	2.4	2.5
110-54-3	Hexane													
110-62-3	Pentanal		6.8	5.4	6.2	5.6	7.2	5.9	7.7	6.3	6.4	6.6	7.4	7
110-80-5	Ethanol, 2-ethoxy		0.4	0.3	0.4	0.3	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.4
110-82-7	Cyclohexane			1.2	0.9	1.4	1.5			1.2				
110-83-8	Cyclohexene													
110-86-1	Pyridine					0.1								
110-93-0	5-Hepten-2-one, 6-methyl													
111-15-9	Ethanol, 2-ethoxy-, acetate (2-Ethoxyethyl acetate)		1	0.9	1	0.9	1	1	1	0.9	0.9	0.9	0.9	1.1
111-27-3	1-Hexanol (N-Hexyl alcohol)				1.8	1.6	1.7	1.5	1.7	1.6	1.6	1.6	1.6	1.7
111-46-6	Diethylene glycol (2,2'-oxybisethanol)							2.4	2.2	3.4	4.2	3.4	2.1	1.9
111-65-9	Octane													
111-66-0	1-Octene													
111-70-6	1-Heptanol		2.7	2.5	2.7	2.3	2.5	2.5	2.7	2.6	2.7	2.6	9.6	10.2
111-71-7	Heptanal (Heptaldehyde)													
111-76-2	Ethanol, 2-butoxy		6.6	6.2	7.1	5.7	6.6	6.5	7	6.8	7.5	7		
111-84-2	Nonane													
111-87-5	1-Octanol		3.1	3.2	3.5	3	3.3	3.5	3.8	3.6	3.8	3.7	3.6	4
112-30-1	1-Decanol (N-Decyl alcohol)													
112-31-2	Decanal		0.8	0.9	0.9	1.1	0.8	0.9	1.1	1.2	1.1	1.1	0.8	1.1
112-40-3	Dodecane													
112-41-4	1-Dodecene		1.2	1.4	1	0.9	0.8	0.9	1.2	1.1	1.2	1.2	1.1	1.3
1120-21-4	Undecane		3.2	3.9	4	3.5	3.4	4	4.3	4.3	4.5	4.2	3.8	4.5
1137-12-8	1,2,4-Methenoazulene, decahydro-1,5,5,8a-tetramethyl-, [1S-(1à													
1191-99-7	Furan, 2,3-dihydro							0.2						
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-		0.7	0.8	0.9	0.8	0.7	0.9	0.9	1	0.9	0.9	0.8	1
122-03-2	Benzaldehyde, 4-(1-methylethyl)													
123-05-7	Hexanal, 2-ethyl													
123-11-5	Benzaldehyde, 4-methoxy-		0.2		0.3		0.2	0.4						
123-19-3	4-Heptanone						17.1							
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)		1.8	1.9	2.1	1.8	2	2.1	2.3	2.2	2.1	2.1	2.2	2.6
123-42-2	2-Pentanone, 4-hydroxy-4-methyl-								0.6	0.6	0.3	0.7	0.7	0.7
123-51-3	1-Butanol, 3-methyl													
123-75-1	Pyrrolidine												0.7	
123-86-4	Acetate, butyl													
124-11-8	1-Nonene													
124-13-0	Octanal		5.5	5.1	5.8	4.7	5.2	5.2	6.6	6.1	6.3	5.9	6	6.5
124-18-5	Decane													
124-19-6	Nonyl aldehyde (Nonanal)		10.4	9.9	10.9	8.5	9.2	10.2	11.8	11.3	11.8	10.6	10.2	11.6
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)													
127-51-5	à-Isomethyl ionone													
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)		18.4	15.8	17.6	15.5	18.1	17.5	19.1	17	17.8	17	18	19.7
128-37-0	2,6-Di-tert-butyl-4-methylphenol (BHT)			0.2	0.1	0.3		0.2	0.3	0.4	0.3	0.5	0.2	0.3
128-39-2	Phenol, 2,6-bis(1,1-dimethylethyl)									0.1	0.1	0.1		
13151-04-7	1-Heptene, 5-methyl													
13151-34-3	Decane, 3-methyl		1.9	2	2.1	1.8	1.9	2	2.3	2.1	2.1	2	2	2.3
13231-81-7	1-Hexanol, 3-methyl												1	0.4
13287-23-5	Heptadecane, 8-methyl-								0.1					
13466-78-9	3-Carene													
13491-79-7	Cyclohexanol, 2-(1,1-dimethylethyl)													
135-01-3	Benzene, 1,2-diethyl													
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)		13.7	14.6	15	14.9	13.1	16.8	20.1	19.2	20.3	18	16.7	18.7
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)		0.8		0.9	0.8	0.8	0.9		0.9		0.9	0.9	
140-67-0	Estragole (4-Allylanisole)		2.7	3.5	2.4	2.1	1.8	2.3	4.2	4.3	4.4	4.1	3.4	4.1
141-63-9	Pentasiloxane, dodecamethyl								0.4			0.3		
141-78-6	Acetate, ethyl		0.7	0.3	0.3	0.4	0.7	0.4	0.4	0.3	0.4	0.5	0.4	0.3
141-79-7	3-Penten-2-one, 4-methyl			0.4	0.4				0.5	0.4	0.4	0.4	0.5	0.5
141-93-5	Benzene, 1,3-diethyl													
142-62-1	Hexanoic acid		0.7	0.7	0.6	0.5	0.6				0.3			
142-82-5	Heptane													
143-08-8	1-Nonanol													
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl													
1455-20-5	Thiophene, 2-butyl		0.4	0.4	0.3	0.3	0.3	0.3						
14686-13-6	2-Heptene, (E)													
1515-79-3	5,5-Dimethyl-1,3-hexadiene		1.6	1.4	1.5	0.8	1.6							
1528-25-2	4-Heptanone, 3-ethyl													
15356-70-4	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2á,5à)-(+/-) (Mer													
1576-87-0	t-2-Pentenal													0.2

15869-92-8	Octane, 3,4-dimethyl												
15870-10-7	1-Heptene, 2-methyl		1.1	1.3	0.6	1.1	1						
1595-16-0	Benzene, 1-methyl-4-(1-methylpropyl)-												
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl	1.5	1.7	1.2	1	1	1.2	1.3	1.2	1.2	1.2	1.2	1.3
16325-63-6	2,4,4-Trimethyl-1-pentanol												
1640-89-7	Cyclopentane, ethyl												
16491-15-9	Cyclopentene, 1,5-dimethyl												
16746-86-4	2,3-Dimethyl-1-hexene												
1678-97-3	Cyclohexane, 1,2,3-trimethyl							2.9	2.7	2.8	2.9	2.9	3.3
16982-00-6	Benzene, 1-methyl-4-(1,2,2-trimethylcyclopentyl)-, (R)-							0.4	0.3	0.2			
17066-67-0	Naphthalene, decahydro-4a-methyl-1-methylene-7-(1-methyleth												
17081-21-9	Propane, 1,3-dimethoxy-	0.2	0.1	0.2	0.1	0.1	0.2						
17302-32-8	Nonane, 3,7-dimethyl	0.4	0.3	0.4		0.4						0.4	0.4
17312-57-1	Dodecane, 3-methyl									0.2			
17374-18-4	Tetrahydro-1,3-oxazine-2-thione	0.6	0.2		0.1	0.5	0.7	0.3	0.4	0.4	0.4	0.7	0.4
17498-71-4	Benzene, (2-methyl-1-methylenepropyl)-												
1750-51-2	Naphthalene, decahydro-1,6-dimethyl-							3.8	4.3	4.3	3.8	2.5	3
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl	0.7		1.8		1.6	1.8					0.8	1.1
17851-27-3	Benzene, 1-ethyl-2,4,5-trimethyl												
1795-15-9	Cyclohexane, octyl	0.3	0.3	0.3	0.5	0.2	0.4	0.5	0.6	0.3	0.3	0.4	0.4
18479-58-8	7-Octen-2-ol, 2,6-dimethyl	2.4	2.4	2.7	2.4	2.6	2.8	3.1	3	3.1	3.2	3	3.4
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate	0.5	2.1	1.7	6.4	1	2.3	4.6	7.7	7.3	7.8	1.7	1.1
18669-52-8	1,4-Hexadiene, 2,3-dimethyl												
18794-77-9	Thiophene, 2-hexyl	1.5	3.2	2.7	1.9	1.4	3.9	3.9	4.2	4.8	4.3	2.6	3.7
19037-72-0	Cyclopentene, 4,4-dimethyl-												
19549-87-2	1-Heptene, 2,4-dimethyl												
20027-77-4	Naphthalene, 1,2,3,4-tetrahydro-5,6-dimethyl-										0.3		
20279-29-2	Phenyl isobutyrate	0.3	0.6	0.5	0.5	0.3	0.8	0.8	0.9	0.9	0.9	0.6	0.7
203-65-6	5H-Benzo[def]carbazole				0.1								
2039-89-6	Styrene, 2,5-dimethyl	1.1	1.5	1.5	1.4	1.2	1.5	2.5	1.6	2.5	1.5	1.4	2.6
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-												
21693-51-6	Naphthalene, 1,2,3,4-tetrahydro-1,5,8-trimethyl-				0.3								
2207-03-6	Cyclohexane, 1,3-dimethyl, trans						1.4	1.5	1.2	1.2	1.3	1.7	
2207-04-7	Cyclohexane, 1,4-dimethyl, trans												
2213-23-2	Heptane, 2,4-dimethyl	0.5	0.5	0.5	0.4	0.6	0.6	0.6	0.5	0.4	0.5	0.6	0.7
2213-32-3	1-Pentene, 2,4-dimethyl	1.1											
2216-30-0	Heptane, 2,5-dimethyl												
2234-20-0	Styrene, 2,4-dimethyl							1.6	1.7	1.7	1.7	1.4	1.7
2402-06-4	Cyclopropane, t-1,2-dimethyl												
2437-56-1	1-Tridecene												
2452-99-5	Cyclopentane, 1,2-dimethyl												
2453-00-1	Cyclopentane, 1,3-dimethyl	1.1	1	0.2	0.2			0.8	0.2				
24720-09-0	à-Damascone (2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1		0.4	0.3	0.5		0.4	0.5	0.6	0.6	0.6	0.3	0.4
2532-58-3	Cyclopentane, 1,3-dimethyl, cis							0.4					
27522-11-8	1-Pentanol, 2-ethyl	0.4	0.3	0.4	0.3							0.4	
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-methyl	0.2	0.3			0.2	0.3	0.8				0.3	0.4
287-92-3	Cyclopentane												
292-64-8	Cyclooctane												
2958-76-1	Naphthalene, decahydro-2-methyl		0.7	0.6				0.8	0.5	0.5		0.7	0.9
3208-16-0	Furan, 2-ethyl	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3
3221-61-2	Octane, 2-methyl												
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)	0.3	0.4	0.4	0.5	0.3	0.5	0.6	0.6	0.5	0.6	0.4	0.5
3333-13-9	Benzene, 1-methyl-4-(2-propenyl)	1.2	1.4										
3404-65-7	3-Methyl-3-hexene,c&t												
3522-94-9	Hexane, 2,2,5-trimethyl												
3524-73-0	1-Hexene, 5-methyl												
35507-09-6	7-Hexadecene, (Z)-							0.3					
3853-83-6	1H-Benzocycloheptene, 2,4a,5,6,7,8,9,9a-octahydro-3,5,5-trime												
3856-25-5	Copaene		0.3	0.2	0.4		0.3	0.5	0.7	0.6	0.7	0.2	0.3
3944-36-3	2-Propanol, 1-(1-methylethoxy)	2.3	2	3.6	1.9	3.4	3.3	3.6	3.3	3.6	3.4	3.5	3.7
40117-45-1	Heptane, 2,2,6,6-tetramethyl												
4050-45-7	2-Hexene, (E)												
41436-42-4	2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-												
4175-54-6	Naphthalene, 1,2,3,4-tetrahydro-1,4-dimethyl	0.2	0.5	0.5		0.2	0.4	0.6		0.3	0.3		
4218-48-8	Benzene, 1-ethyl-4-(1-methylethyl)	0.5	0.7	0.8	0.7	0.6	0.8						
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl	0.1	0.4	0.3	0.8	0.1	0.4	0.6	0.9	0.8	0.9	0.3	0.3
464-17-5	Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl							3.9	3.7	3.9	3.7	3.4	4.2
464-45-9	L-borneol (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-,(1S-endo)-	1.8	3.4	3.5	3.1	2.6	3.6						
469-61-4	Cedrene, à		0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.4	0.5	0.6	0.4
470-40-6	Thujopsene	0.2	0.8	0.5	1	0.1	0.7	1.7	1.8	1.4	1.7	0.8	0.9
470-82-6	Eucalyptol												
4706-90-5	Benzene, 1,3-dimethyl-5-(1-methylethyl)												
475-20-7	Longifolene	0.6	1.4	1.1	1.9	0.7	1.5	2.2	2.8	2.6	2.7	1.4	1.5
4798-45-2	1-Penten-3-ol, 4-methyl-												
488-23-3	Benzene, 1,2,3,4-tetramethyl	1.2	1.7	0.6	1.9	0.6	0.7	2	1.8	1.8	2.3	1.4	1.7
491-01-0	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5á)-												
491-02-1	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5à)-												
4923-78-8	Cyclohexane, 1-ethyl-2-methyl, trans												
4926-78-7	Cyclohexane, c-1-ethyl-4-methyl												
493-02-7	t-Decahydronaphthalene												
496-11-7	Indane												
4994-16-5	4-Phenylcyclohexene	0.1	0.3	0.3	0.3	0.1	0.3	0.4	0.4	0.3	0.4	0.2	0.4
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one								0.4	0.1	0.4		
513-35-9	2-Butene, 2-methyl												
5131-66-8	2-Propanol, 1-butoxy	2.4	2.3	2.6	2.1	2.5	2.6	2.8	2.9	3	2.8	2.8	3.3
51655-64-2	Nonane, 3-methylene	1.3	1.1	2.1	1.7	2.3	2.1	2.7	2.4	2.1	2.2	1.3	2.2
52253-93-7	Homomenthyl salicylate							0.1					
527-53-7	Benzene, 1,2,3,5-tetramethyl	1.4	1.3	1.8	0.6		1.7	1.6	0.7	0.7	0.8	0.7	0.9
540-97-6	Cyclohexasiloxane, dodecamethyl		0.4	0.5	0.6	0.6	0.4	1.6	0.7	0.4	0.8	0.5	0.4
541-02-6	Cyclopentasiloxane, decamethyl	4.7	11.5	6.6	21.2	4	11.7	21.6	25	27.8	24.6	10	8.7
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate	0.2	0.7	0.6	0.8	0.3	0.6						
542-28-9	2H-Pyran-2-one, tetrahydro-												
544-76-3	Hexadecane (Cetane)			0.3		0.1		0.5				0.1	0.2
554-12-1	Propanoic acid, methyl ester						0.2						0.2
555-10-2	á-Phellandrene	3.8	3.8	4.2	3.7	4.1	4.1	4.6	4.4	4.5	4.5	4.5	5.2
556-67-2	Cyclotetrasiloxane, octamethyl	4	5	4.2	3.4	3.9	4.2	4.6	4.2	4.3	4.1	6.2	6.9
560-21-4	Pentane, 2,3,3-trimethyl												
563-46-2	1-Butene, 2-methyl												
563-79-1	2-Butene, 2,3-dimethyl												
565-59-3	Pentane, 2,3-dimethyl	0.6	0.5	0.5	0.5	0.8		0.8	0.5		0.7	0.8	
565-69-5	3-Pentanone, 2-methyl	0.2	0.2	0.2	0.2								
565-75-3	Pentane, 2,3,4-trimethyl					0.3							
565-80-0	3-Pentanone, 2,4-dimethyl	18.3	13	15.8	9.3		13	11.3					
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-				0.6	0.2							
57-55-6	1,2-Propanediol (Propylene glycol)	3.5				3.9	3.4		2.4	4.5	3.9	2.7	0.9
5794-03-6	(+)-Camphene	1.6		1.4	1.3	1.6	1.5	1.7	1.5	1.6	1.6		
585-34-2	Phenol, m-tert-butyl	0.1	0.6	0.4		0.1	0.4	1.1	1	0.8	1.2	0.4	0.4
586-62-9	Cyclohexene, 1-methyl-4-(1-methylethylidene)												
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)							0.1	0.1	0.1	0.1		
589-34-4	Hexane, 3-methyl	2.9	2.3	2.6	2.3	4.7	2.4	4.6	2.7	2.6	4.3	5.2	3.1
589-38-8	3-Hexanone (Ethyl propyl ketone)						0.2	0.2	0.2	0.1			
589-43-5	Hexane, 2,4-dimethyl	0.6	0.5	0.5	0.4	0.7	1	0.6	0.6	0.7	0.7	0.7	
589-81-1	Heptane, 3-methyl	0.9	0.7	0.7	0.7	0.8	0.6	0.9	0.8	0.7	0.7	0.8	0.8
591-76-4	Hexane, 2-methyl	3.3	2.6	2.6	2.6	4.3	3.2	4.4	2.9	3.2	3.7	4.3	3.8
591-78-6	2-Hexanone	0.8	0.7	0.8	0.6	0.8	0.7	0.8	0.7	0.7	0.6	0.6	0.6
591-93-5	1,4-Pentadiene												
5911-04-6	Nonane, 3-methyl									0.4	0.4		
592-13-2	Hexane, 2,5-dimethyl	0.5	0.4	0.5	0.4	0.5		0.6	0.6	0.4	0.6	0.6	
592-27-8	Heptane, 2-methyl	1.8	1.5	1.3	1.1	1.7	1.3	1.9	1.6	1.3	1.6	1.5	1.4
592-76-7	1-Heptene												
592-77-8	2-Heptene												
593-45-3	Octadecane			0.1				0.1					
5989-08-2	Tricyclo[5.4.0.0(2,8)]undec-9-ene, 2,6,6,9-tetramethyl-	0.2	0.4	0.3	0.4		0.4						

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6004-38-2	4,7-Methano-1H-indene, octahydro												
6094-02-6	1-Hexene, 2-methyl-							0.9	0.9	0.8	0.8	1	1.3
611-14-3	Benzene, 1-ethyl-2-methyl (2-Ethyltoluene)												
6131-25-5	Heptane, 3-methyl	0.9	0.7	0.7	0.7	0.8	0.6	0.9	0.8	0.7	0.7	0.8	0.8
616-12-6	2-Pentene, 3-methyl, (E)												
617-78-7	Pentane, 3-ethyl												
617-94-7	Benzenemethanol, à,à-dimethyl-												
620-14-4	Benzene, 1-ethyl-3-methyl	1.5	1.4	1.5	1.6	1.6	1.6	2.1	1.9	1.9	2	1.7	2
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)			1	0.9	1	1.1	1.1	1	1.1	1.1		1.3
62238-33-9	Cyclohexane, 1-ethyl-2-propyl							1.9					
6236-88-0	Cyclohexane, t-1-ethyl-4-methyl												
624-16-8	4-Decanone	0.7				0.7	0.8						
624-29-3	Cyclohexane, 1,4-dimethyl, cis												
625-27-4	2-Pentene, 2-methyl												
626-38-0	2-Pentanol, acetate	0.6	0.5	0.6	0.5	0.6	0.5						
629-50-5	Tridecane		0.3		0.4				0.5	0.5	0.5	0.3	
629-59-4	Tetradecane												
629-62-9	Pentadecane			0.3		0.2							
629-78-7	Heptadecane			0.1		0.1		0.2				0.1	0.1
629-82-3	Octane, 1,1'-oxybis												
629-92-5	Nonadecane												
638-04-0	Cyclohexane, c-1,3-dimethyl			0.1	0.1		0.1	0.1	0.1				
64-17-5	Ethanol						0.1						0.1
64-18-6	Formic acid (Methanoic acid)	0.2	0.1	0.1		0.2		0.1	0.1	0.1	0.1	0.1	
64-19-7	Acetic acid	7.1	4.6	8.2		8.5	2.9	10.9	11	8.1	12.9	8.9	9.9
6418-43-5	Hexadecane, 3-methyl							0.3					
646-04-8	2-Pentene, (E)-												
66-25-1	Hexanal	20.5	18.7	20	17.7	19.6	17.7	22.1	20.7	20.7	20.4	19.8	20.3
6682-71-9	1H-Indene, 2,3-dihydro-4,7-dimethyl												
67-63-0	2-Propanol (Isopropanol)						2.1						2.8
67-64-1	Acetone		0.9	1	1.5		1.5	1.3	1.3	1.3	1.5	1.5	
68284-24-2	Cycloheptane, 1,3,5-tris(methylene)-												
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)	0.6	1.2	1.3	1.7	1.4	1.1	2.1	1.7	1.2	1.6	1	1.2
6876-23-9	Cyclohexane, t-1,2-dimethyl												
690-08-4	2-Pentene, 4,4-dimethyl, (E)			0.3	0.2	0.2		0.2	0.2	0.2	0.2	0.2	0.3
691-38-3	2-Pentene, 4-methyl, (Z)												
693-89-0	Cyclopentene, 1-methyl												
6975-98-0	Decane, 2-methyl						0.4						
71-36-3	1-Butanol (N-Butyl alcohol)	11.9	7.6	6.3	8.7	10.4	9.7	9.9	9.4	12.7	12.5	11.1	6.1
71-41-0	1-Pentanol (N-Pentyl alcohol)	4	3.5	4.3	3.5	4	3.8	4.4	4.2	4.4	4.2	4.2	4.3
71-43-2	Benzene												
7146-60-3	Octane, 2,3-dimethyl												
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)				0.9								
7319-23-5	3-Hexen-2,5-diol												
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl												
7379-12-6	3-Hexanone, 2-methyl								8.7	9.3	8.2	14.9	16
7452-79-1	Butanoic acid, 2-methyl-, ethyl ester												
75-15-0	Carbon disulfide				0.1		0.2						0.2
76-49-3	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, endo (Bornyl												
763-93-9	3-Hexen-2-one	0.4					0.4						
764-13-6	2,4-Hexadiene, 2,5-dimethyl												1.8
768-49-0	1-Phenyl-1-propene, 2-methyl												
7688-21-3	2-Hexene, (Z)												
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	1.2	4.7	3.4	13.2	1.4	4.7	9.1	16.4	15.4	15.7	3.3	2.2
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro							1	1.1	0.8	1	0.6	0.7
7779-30-8	1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-												
78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-			0.6	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.6	0.7
78-78-4	Butane, 2-methyl (Isopentane)	0.2		0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3
78-79-5	1,3-Butadiene, 2-methyl	1.1	0.7	0.4	0.7	0.8	0.5	0.6	0.7	0.6	0.6	0.4	0.3
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)	3.8	2.2	1.8	3	4.9	2	2.2	2.3	2.7	3.4	2.7	1.4
78-84-2	Propanal, 2-methyl (Isobutanal)	8.4	6.6	7.4	5.2	7.9	6.3	6.9	5.8	10.1	5.4	7.4	7.6
78-85-3	2-Propenal, 2-methyl				0.8	0.2							
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)	4.7	3.6		6.4	5.3	6.8					4.5	
78-94-4	Methyl vinyl ketone (3-Buten-2-one)												
79-09-4	Propanoic acid		0.5	0.7			0.4			0.4	0.6		1.1
79-20-9	Acetate, methyl (Acetic acid, methyl ester)						0.1						0.1
79-31-2	Propanoic acid, 2-methyl	0.9	1	1.2		0.8	1	0.8	0.8	0.9		1.1	1.6
80-54-6	Lilial												
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	54.8	49.9	49.9	49	55	44.7	52.9	50.7	48.6	51.2	50.9	48.4
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)						32.3						34.6
821-95-4	1-Undecene	2.6	2.5	2.9	2.4	2.7	2.7						
824-90-8	1-Phenyl-1-butene		0.9	1.5	1.4	1.2	1.6						
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)								0.7	0.2		0.5	0.8
870-82-6	Eucalyptol												
871-83-0	Nonane, 2-methyl												
874-35-1	1H-Indene, 2,3-dihydro-5-methyl												
89-74-7	Ethanone, 1-(2,4-dimethylphenyl)-												
90-12-0	Naphthalene, 1-methyl												
91-17-8	Naphthalene, decahydro-												
91-20-3	Naphthalene	2.7	3.4	3	2.2	2.8	5.5	4.8	3.8	5.5	4.6	4.1	4.2
91-57-6	Naphthalene, 2-methyl	0.2	0.5	0.4	1	0.2	0.4	0.6	0.7	0.6	0.7	0.4	0.5
92-52-4	1,1'-Biphenyl	0.1	0.5	0.3	0.6	0.1	0.4	1.1	0.8	0.6	0.7	0.3	0.4
922-62-3	2-Pentene, 3-methyl, cis												
922-63-4	2-Ethylacrolein										0.2	0.2	
92618-89-8	Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester	0.2	0.3	0.3			0.3		0.9	0.7	0.8	0.3	0.3
930-18-7	Cyclopropane, 1,2-dimethyl, cis												
930-27-8	Furan, 3-methyl	0.2			0.1		0.2						
933-12-0	Cyclohexene, 3,3,5-trimethyl	0.2			0.1	0.2	0.2		0.2	0.2	0.2	0.2	0.2
934-80-5	Benzene, 4-ethyl-1,2-dimethyl	1.6		1.6	1.5	1.2	1.4		2	2	1.9	1.9	2.2
95-16-9	Benzothiazole	0.6	0.9	1	0.8	0.7	1.1	1.1	1.1	1	1.1	0.9	1.6
95-47-6	Xylene, ortho	2.2	1.9	2.2	2	2.5	2.4	2.5	2.2	2.3	2.5	2.7	3.1
95-93-2	Benzene, 1,2,4,5-tetramethyl	2.5	2.8	3.2	2.9	2.9	3.2	0.8	1.8	1.8	1.8	1.7	2.1
96-14-0	Pentane, 3-methyl												
96-29-7	2-Butanone, oxime												
96-37-7	Cyclopentane, methyl	0.2	0.1	0.1	0.1	0.3	0.2	0.3	0.1	0.1	0.3	0.3	0.2
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)	0.7	0.6	0.7	0.5	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.8
97-72-3	Propanoic acid, 2-methyl-, anhydride	0.2	0.5	0.4	0.5	0.2	0.5	0.6	0.7	0.5	0.6	0.4	0.5
98-00-0	2-Furanmethanol									0.3			
98-01-1	Furfural (2-Furaldehyde)	1.1	1.2		1								
98-55-5	3-Cyclohexene-1-methanol, à,à,4-trimethyl			1.3	1.3	1	1.4						
98-82-8	Benzene, 1-methylethyl (Cumene)												
99-71-8	Phenol, 4-(1-methylpropyl)-												
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-					0.1							

Unit 91 VOC Data

cas_number	chemical	510	16339-010AA SV1 (1.000) c_526137	16339-010AA SV2 (2.000) c_526138	16339-010AA SV3 (3.000) c_526139	16339-010AA SV4 (4.000) c_526140	16339-010AA SV5 (5.000) c_526141	16339-010AA SV6 (6.000) c_526142	16339-020AA SV1 (1.000) c_526144	16339-020AA SV2 (2.000) c_526145	16339-020AA SV3 (3.000) c_526146	16339-020AA SV4 (4.000) c_526147	16339-020AA SV5 (5.000) c_526148	16339-020AA SV6 (6.000) c_526149
									Control Home					
	Home Identification		Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91	Unit 91
	Sample Location		Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 1	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2	Loc 2
	Location Description		1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	1st FL LR	2nd FL BR	2nd FL BR	2nd FL BR	2nd FL BR	2nd FL BR	2nd FL BR
	Start-End Times		12:20-16:45	16:45-21:10	21:10-00:35	0:35-04:30	04:30-08:30	08:30-13:25	12:20-16:40	16:40-21:05	21:05-00:50	00:50-04:35	04:35-08:35	08:35-13:35
	TVOC (ug/m3)		**522**	**456**	**480**	**466**	**487**	**547**	**502**	**488**	**513**	**545**	**559**	**553**
100-18-5	Benzene, 1,4-bis(1-methylethyl)-						0.4							0.8
100-41-4	Benzene, ethyl		16.2	14.7	15.8	19.4	22.6	22.9	16	13.8	13.7	17.6	20.4	20.3
100-42-5	Styrene		2.8		3	2.8	2.8	2.9	2.5		2.5			2.5
100-52-7	Benzaldehyde		4.9	4.6	4.9	4.6	4.9	5.3	5.3	4.8	4.6	5	5	5
1000131-87-	Propanal, 2-methyl-3-phenyl-			0.1								0.6		
1000131-87-6	Propanal, 2-methyl-3-phenyl-			0.1								0.6		
1000299-11-8	Butanoic acid, 3-methylbut-2-enyl ester													
1000350-93-6	1,3,5-Triazine-2(1H)-thione, tetrahydro-5-[(4-methoxyphenyl)		0.2											
1003-19-6	Cyclopropane, 1,1-diethyl							0.4						
101-84-8	Benzene, 1,1'-oxybis- (Diphenyl ether)		0.2	0.1	0.1		0.1	0.2	0.2	0.2	0.4	0.3	0.4	0.3
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (Octyl acrylate)													
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester								0.2		1			
103-65-1	Benzene, propyl		3	3	3.2	3.3	3.4	3.4	3.2	3	3	3.4	3.3	3.1
103-70-8	Formamide, N-phenyl-										0.2	0.1	0.2	
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)							0.5						
104-76-7	1-Hexanol, 2-ethyl		5.3	5.1	5.3	5.2	5.2	5.9	5.5	5.2	5	5.4	5.6	5.6
105-82-8	Propane, 1,1'-[ethylidenebis(oxy)]bis													
10574-36-4	2-Hexene, 3-methyl-, (Z)		0.4	0.3	0.3	0.2	0.4		0.3	0.3		0.3	0.4	
10574-37-5	2-Pentene, 2,3-dimethyl													
106-42-3	Xylene (para and/or meta)		49.3	45.9	52.6	51	51.8	48.1	50.4	45.5	46.8	51.3	51	45.7
106-46-7	Benzene, 1,4-dichloro		0.9	0.9	1	0.9	1	1.1	1	0.9	0.9	1	1	1
107-02-8	Acrolein (2-Propenal)													
107-06-2	Ethane, 1,2-dichloro													
107-13-1	2-Propenenitrile (Acrylonitrile)													
107-21-1	1,2-Ethanediol (Ethylene glycol)					1.8								
107-83-5	Pentane, 2-methyl		2.9	2.4	2.9	3.4	3.5	3.2	3	2.5	2.6	3.1	3.3	3
107-87-9	2-Pentanone		1	0.9	1.1	1.1	1.1	1	1	0.9	1			1
107-92-6	Butanoic acid													
1070-66-2	2-n-Butylacrolein		0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7
1071-81-4	Hexane, 2,2,5,5-tetramethyl													
1072-05-5	Heptane, 2,6-dimethyl				0.6	0.6	0.6	0.6				0.6		
1074-17-5	Benzene, 1-methyl-2-propyl			0.8		1.8	2.1		0.9	0.8	0.8	0.9	0.9	0.9
1074-43-7	Benzene, 1-methyl-3-propyl			2.1	2	2.9	2.9	3.2	2.2	2.1		2.2	2.2	
1074-55-1	Benzene, 1-methyl-4-propyl			2.5	3.7	2.4	0.8							
1075-22-5	1H-Indene, 2,3-dihydro-5,6-dimethyl													
108-08-7	Pentane, 2,4-dimethyl													1
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)		2.2	1.9	1.7	1.8	1.8	4.5	1.8	2	1.9	1.9	2	3.9
108-38-3	Xylene (meta and/or para)													
108-65-6	1-Methoxy-2-propyl acetate													
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)		3.6	3.4	3.6	3.7	3.6	3.9	3.7	3.4	3.3	3.7	3.7	3.6
108-87-2	Cyclohexane, methyl		1	0.9	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.6	1.2
108-88-3	Toluene (Methylbenzene)		42.8	38.7	45.2	43	44.5	39.5	43.4	38.1	39.9	43.1	42.5	37.5
109-08-0	Pyrazine, methyl													
109-60-4	Acetic acid, propyl ester (Propyl acetate)													
109-66-0	Pentane		1.9	1.9	2.9	3.5	2.2	2	1.6	1.7	2.1	2.9	2.7	1.7
109-68-2	2-Pentene		0.4			0.4	0.8	0.7	0.5	0.4	0.4		0.3	0.4
110-43-0	2-Heptanone		1.9	1.9	2.1	2.1	2.1	2.2	2.1	2	2	2.1	2.2	2.1
110-54-3	Hexane		8.1	5.4	5	9.3	8.6	7.7	5.5	6.4	4	5	7	8.6
110-62-3	Pentanal		6.9	6.2	7.2	7.1	7.4	7.7	7.4	6.8	6.5	7.2	8.7	7.2
110-80-5	Ethanol, 2-ethoxy					0.3								
110-82-7	Cyclohexane													
110-83-8	Cyclohexene			0.1	0.2			0.3	0.2	0.1			0.2	
110-86-1	Pyridine			0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2		0.2	
110-93-0	5-Hepten-2-one, 6-methyl													
111-15-9	Ethanol, 2-ethoxy-, acetate (2-Ethoxyethyl acetate)													
111-27-3	1-Hexanol (N-Hexyl alcohol)		4.7	4.5	5.1	4.9	4.9	5	5.1	4.8	4.7	5.1	5.2	4.9
111-46-6	Diethylene glycol (2,2'-oxybisethanol)													
111-65-9	Octane													
111-66-0	1-Octene													
111-70-6	1-Heptanol		3.2	3.1	3.3	3.2	3.2	3.5	3.8	3.7	3.5	3.8	3.9	3.9
111-71-7	Heptanal (Heptaldehyde)													
111-76-2	Ethanol, 2-butoxy		6.7	9	6.2	6.4	6.3	6.6	6.3	8.8	6	9.1	9.3	6.6
111-84-2	Nonane		1.9	1.8	2.1	2.1	2.2	2.2	1.9	1.8	1.9	2.1	2.1	2
111-87-5	1-Octanol													
112-30-1	1-Decanol (N-Decyl alcohol)		2.2	0.3										
112-31-2	Decanal		0.9	0.7	0.5	0.4	0.6	0.8	0.7	0.9	0.9	0.9	0.9	1.1
112-40-3	Dodecane										3.4	3.4	3.4	3.9
112-41-4	1-Dodecene		0.9											
1120-21-4	Undecane		4.4	3.4	3.3	2.6	3.4	4.3	3.7	4	4.2	4.1	4.1	4.6
1137-12-8	1,2,4-Methenoazulene, decahydro-1,5,5,8a-tetramethyl-, [1S-(1à							0.1						
1191-99-7	Furan, 2,3-dihydro													
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-													
122-03-2	Benzaldehyde, 4-(1-methylethyl)		0.6	0.4	0.4	0.3	0.5	0.8	0.6	0.5	0.6		0.6	0.2
123-05-7	Hexanal, 2-ethyl													
123-11-5	Benzaldehyde, 4-methoxy-						0.2							
123-19-3	4-Heptanone													
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)													
123-42-2	2-Pentanone, 4-hydroxy-4-methyl-													
123-51-3	1-Butanol, 3-methyl			0.2	0.2	0.2	0.2	0.2		0.2		0.2	0.2	0.2
123-75-1	Pyrrolidine													
123-86-4	Acetate, butyl													
124-11-8	1-Nonene					1	1	0.9	0.9	0.9	0.2	1	1	0.8
124-13-0	Octanal		5.1	5.1	5.4	4.9	5.1	5.4	5.8	5.3	5.1	5.5	5.3	5.4
124-18-5	Decane													
124-19-6	Nonyl aldehyde (Nonanal)		9.8	8.6	8	7.1	8.1	9.4	9.8	10.1	9.5	9.8	9.4	10.7
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)			0.4					0.5	0.5	0.5	0.6		
127-51-5	à-Isomethyl ionone		0.5	0.3	0.2	0.1	0.2	0.4	0.2	0.4	0.7	0.6	0.7	0.6
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)		15.7	14.2	15.3	15.5	16.2	17.3	16.3	14.8	14.8	16.4	16.9	16.7
128-37-0	2,6-Di-tert-butyl-4-methylphenol (BHT)		0.1											0.1
128-39-2	Phenol, 2,6-bis(1,1-dimethylethyl)													
13151-04-7	1-Heptene, 5-methyl		1	1.8	1.9	1.1	1.1	1.2	2	1.9	1.9	2	2.1	1.1
13151-34-3	Decane, 3-methyl		2.2					2.4			2.1			2.3
13231-81-7	1-Hexanol, 3-methyl													
13287-23-5	Heptadecane, 8-methyl-													
13466-78-9	3-Carene													
13491-79-7	Cyclohexanol, 2-(1,1-dimethylethyl)		0.3	0.2	0.1	0.1	0.2	0.3	0.6	0.8	0.9	0.8	0.9	0.9
135-01-3	Benzene, 1,2-diethyl											3.1	3.2	3.1
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)		24.1	20.9	21.3	21.1	21	22.4	24.1	20.7	19.7	21.4	21.5	21.4
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)													
140-67-0	Estragole (4-Allylanisole)		2.8	2.3	2.2	1.9	2.3	2.8	3	3	2.9	3	3	3.4
141-63-9	Pentasiloxane, dodecamethyl													
141-78-6	Acetate, ethyl		0.5	0.6	0.7	1.1	0.6	0.6	0.4	0.5	0.5	0.7	0.7	0.5
141-79-7	3-Penten-2-one, 4-methyl													
141-93-5	Benzene, 1,3-diethyl						0.8							
142-62-1	Hexanoic acid		0.7	0.6										0.8
142-82-5	Heptane													
143-08-8	1-Nonanol			1.3	1.3	1.3	1.4	1.6	1.7	1.7	1.8	1.8	1.8	2.1
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl			0.4	0.3			0.5						
1455-20-5	Thiophene, 2-butyl													
14686-13-6	2-Heptene, (E)							0.2	0.2	0.2	0.2	0.2		
1515-79-3	5,5-Dimethyl-1,3-hexadiene													
1528-25-2	4-Heptanone, 3-ethyl			0.3										
15356-70-4	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2á,5à)-(+/-) (Mer								2.7	3				
1576-87-0	t-2-Pentenal													
15869-92-8	Octane, 3,4-dimethyl		0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1		
15870-10-7	1-Heptene, 2-methyl													
1595-16-0	Benzene, 1-methyl-4-(1-methylpropyl)-						0.8							

1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl		0.8	0.8	0.7	0.8	1	1	1	0.9	1	1	1
16325-63-6	2,4,4-Trimethyl-1-pentanol												
1640-89-7	Cyclopentane, ethyl			0.8							0.8	1	
16491-15-9	Cyclopentene, 1,5-dimethyl							0.4					
16746-86-4	2,3-Dimethyl-1-hexene	0.7			0.7	0.7	0.8						
1678-97-3	Cyclohexane, 1,2,3-trimethyl												
16982-00-6	Benzene, 1-methyl-4-(1,2,2-trimethylcyclopentyl)-, (R)-												
17066-67-0	Naphthalene, decahydro-4a-methyl-1-methylene-7-(1-methyleth												0.1
17081-21-9	Propane, 1,3-dimethoxy-												
17302-32-8	Nonane, 3,7-dimethyl												
17312-57-1	Dodecane, 3-methyl									0.2	0.2		
17374-18-4	Tetrahydro-1,3-oxazine-2-thione	0.4			0.4								
17498-71-4	Benzene, (2-methyl-1-methylenepropyl)-					0.2							
1750-51-2	Naphthalene, decahydro-1,6-dimethyl-												
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl			1.3	1.1								
17851-27-3	Benzene, 1-ethyl-2,4,5-trimethyl												0.7
1795-15-9	Cyclohexane, octyl	0.2	0.1	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
18479-58-8	7-Octen-2-ol, 2,6-dimethyl							3.1	3	2.9			
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate	0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.3	0.8	0.5	0.9	0.8
18669-52-8	1,4-Hexadiene, 2,3-dimethyl												
18794-77-9	Thiophene, 2-hexyl	0.8	0.5	0.4	0.3	0.4	0.7	0.6	0.9	1	1	0.9	1.4
19037-72-0	Cyclopentene, 4,4-dimethyl-	0.4											
19549-87-2	1-Heptene, 2,4-dimethyl			0.3				0.3					
20027-77-4	Naphthalene, 1,2,3,4-tetrahydro-5,6-dimethyl-												
20279-29-2	Phenyl isobutyrate												
203-65-6	5H-Benzo[def]carbazole												
2039-89-6	Styrene, 2,5-dimethyl	2.2	2.1	2	1.7	2.1	2.5	2.4	2.5	1.6	1.5	1.7	1.8
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-	0.2	0.5	0.5	0.4	0.5	0.7						
21693-51-6	Naphthalene, 1,2,3,4-tetrahydro-1,5,8-trimethyl-												
2207-03-6	Cyclohexane, 1,3-dimethyl, trans												
2207-04-7	Cyclohexane, 1,4-dimethyl, trans	1.1	1.2	1.1	1.1	1.2	1.4						
2213-23-2	Heptane, 2,4-dimethyl	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5
2213-32-3	1-Pentene, 2,4-dimethyl												
2216-30-0	Heptane, 2,5-dimethyl										1.1		
2234-20-0	Styrene, 2,4-dimethyl												
2402-06-4	Cyclopropane, t-1,2-dimethyl			0.7	1	0.6					0.6	0.7	
2437-56-1	1-Tridecene										0.4	0.5	0.5
2452-99-5	Cyclopentane, 1,2-dimethyl												
2453-00-1	Cyclopentane, 1,3-dimethyl	0.7	0.5	0.4	0.5	0.6	0.6	0.4	0.5	0.5	0.4	0.8	1.4
24720-09-0	à-Damascone (2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1												
2532-58-3	Cyclopentane, 1,3-dimethyl, cis	0.4	0.3	0.4		0.5	0.5	0.4	0.4	0.4	0.4	0.8	0.5
27522-11-8	1-Pentanol, 2-ethyl											1	
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-methyl												
287-92-3	Cyclopentane												
292-64-8	Cyclooctane												
2958-76-1	Naphthalene, decahydro-2-methyl				0.7	0.8	0.9						
3208-16-0	Furan, 2-ethyl	0.8	0.6	0.8	0.9	0.9	0.9	0.8	0.6	0.7	0.8	0.9	0.8
3221-61-2	Octane, 2-methyl	0.5	0.5					0.6	0.5	0.5		0.6	0.6
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)	0.8	0.4	0.4	0.4	0.5	0.7	0.2	0.3	0.4	0.3	0.4	0.4
3333-13-9	Benzene, 1-methyl-4-(2-propenyl)												
3404-65-7	3-Methyl-3-hexene,c&t									0.3	0.2	0.3	0.5
3522-94-9	Hexane, 2,2,5-trimethyl												
3524-73-0	1-Hexene, 5-methyl	0.7	0.8	0.8	1	0.9	0.8	0.8	0.6	0.7	0.9	0.8	0.7
35507-09-6	7-Hexadecene, (Z)-												
3853-83-6	1H-Benzocycloheptene, 2,4a,5,6,7,8,9,9a-octahydro-3,5,5-trime	0.1	0.1			0.1							
3856-25-5	Copaene	0.3	0.1	0.1		0.1	0.2	0.1	0.2	0.4	0.3	0.4	0.4
3944-36-3	2-Propanol, 1-(1-methylethoxy)												
40117-45-1	Heptane, 2,2,6,6-tetramethyl												
4050-45-7	2-Hexene, (E)	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.4
41436-42-4	2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-												0.2
4175-54-6	Naphthalene, 1,2,3,4-tetrahydro-1,4-dimethyl												
4218-48-8	Benzene, 1-ethyl-4-(1-methylethyl)										0.7		0.6
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl	0.2	0.1	0.1			0.1	0.1		0.3	0.3	0.3	0.3
464-17-5	Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl												
464-45-9	L-borneol (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-,(1S-endo)-)												
469-61-4	Cedrene, à												
470-40-6	Thujopsene												
470-82-6	Eucalyptol												
4706-90-5	Benzene, 1,3-dimethyl-5-(1-methylethyl)							0.6	0.7	0.7		0.7	
475-20-7	Longifolene	0.5	0.3	0.3	0.2	0.3	0.5	0.3	0.4	0.7	0.6	0.6	0.6
4798-45-2	1-Penten-3-ol, 4-methyl-	0.1	0.1										
488-23-3	Benzene, 1,2,3,4-tetramethyl	2	1.7	0.6	0.5	1	1.2	1.9	1.9	1.9	2	2	2
491-01-0	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5á)-	3.2	2.5	2.3	1.8	2.3							
491-02-1	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5à)-						3						
4923-78-8	Cyclohexane, 1-ethyl-2-methyl, trans	0.9	0.8	1	1	1	1						
4926-78-7	Cyclohexane, c-1-ethyl-4-methyl	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2				
493-02-7	t-Decahydronaphthalene							1.6	1.5	1.5	1.6	1.6	1.6
496-11-7	Indane	4.1	3.8	3.9	3.7	3.9	4.3	4.2	4	3.9	4.2	4.2	4.2
4994-16-5	4-Phenylcyclohexene												
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one												
513-35-9	2-Butene, 2-methyl								0.5	0.6			0.6
5131-66-8	2-Propanol, 1-butoxy	4.4	4.1	4.4	4.5	4.5	4.8	4.5	4.4	4.4	4.7	4.9	4.7
51655-64-2	Nonane, 3-methylene												
52253-93-7	Homomenthyl salicylate												
527-53-7	Benzene, 1,2,3,5-tetramethyl	0.7	0.6	0.8	1.4		0.7	0.6	0.6	0.6	0.6	0.7	0.7
540-97-6	Cyclohexasiloxane, dodecamethyl		0.2		0.2								
541-02-6	Cyclopentasiloxane, decamethyl	71.3	48.9	30.5	15.1	28.1	42.6	50.4	63.8	82.7	76.5	74.9	66.9
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate	0.5	0.3	0.2	0.1	0.2	0.4	0.4	0.5	0.7	0.6	0.6	0.6
542-28-9	2H-Pyran-2-one, tetrahydro-												
544-76-3	Hexadecane (Cetane)	0.2	0.1						0.1	0.2	0.2		
554-12-1	Propanoic acid, methyl ester						0.2						0.2
555-10-2	á-Phellandrene	6.9	6	6.2	5.9	6.6	7.3	7	6.6	6.5	7.1	7.1	7.3
556-67-2	Cyclotetrasiloxane, octamethyl	5.5	5	5.3	5.2	5.2	5.9	5.8	5	4.8	5.1	5.2	5.4
560-21-4	Pentane, 2,3,3-trimethyl												
563-46-2	1-Butene, 2-methyl						0.5			0.2	0.2		
563-79-1	2-Butene, 2,3-dimethyl	0.1						0.1					
565-59-3	Pentane, 2,3-dimethyl												
565-69-5	3-Pentanone, 2-methyl												
565-75-3	Pentane, 2,3,4-trimethyl	0.6	0.7	0.9	0.7	0.9	0.9	0.8	0.8	0.8	1	6.4	0.9
565-80-0	3-Pentanone, 2,4-dimethyl	5.3	4.9	5.7	5.6	6.2	6	6.1	5.6	4.4	5.1		5
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-			0.3				0.3	0.4	0.5	0.5	0.5	0.5
57-55-6	1,2-Propanediol (Propylene glycol)	0.3			0.8								
5794-03-6	(+)-Camphene												
585-34-2	Phenol, m-tert-butyl												
586-62-9	Cyclohexene, 1-methyl-4-(1-methylethylidene)							2.9	2.8				
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)												
589-34-4	Hexane, 3-methyl	2.3	1.9	2.8	2.8	2.8	3.2	2.4	2.7	2.1	2.4	6	2.8
589-38-8	3-Hexanone (Ethyl propyl ketone)												
589-43-5	Hexane, 2,4-dimethyl	0.8	0.6		0.9	0.9	1.1		0.7	0.8			
589-81-1	Heptane, 3-methyl	1	0.8	0.9	1		1.1	1.8	0.9	0.8	1	1	1.1
591-76-4	Hexane, 2-methyl												1
591-78-6	2-Hexanone	0.9	0.8	1	1.1	1.1	1.1	1	1	1	1	1.1	1
591-93-5	1,4-Pentadiene	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1
5911-04-6	Nonane, 3-methyl				0.6	0.7	0.7						
592-13-2	Hexane, 2,5-dimethyl		0.5	0.6	0.6	0.7	0.7	0.8	0.5	0.8	0.6	0.7	0.6
592-27-8	Heptane, 2-methyl	1.9	1	1.2	1.3	1.3	1.3	1.2	1	1.2	1.3	1.4	1.2
592-76-7	1-Heptene											1.2	
592-77-8	2-Heptene	0.2	0.2	0.2	0.2	0.2						0.2	0.2
593-45-3	Octadecane												
5989-08-2	Tricyclo[5.4.0.0(2,8)]undec-9-ene, 2,6,6,9-tetramethyl-												
6004-38-2	4,7-Methano-1H-indene, octahydro	0.5	0.3										
6094-02-6	1-Hexene, 2-methyl-												
611-14-3	Benzene, 1-ethyl-2-methyl (2-Ethyltoluene)												
6131-25-5	Heptane, 3-methyl	1	0.8	0.9	1		1.1	1.8	0.9	0.8	1	1	1.1
616-12-6	2-Pentene, 3-methyl, (E)	1	0.3	0.4	0.5	0.6	0.6	0.4	0.4	0.4	0.5	0.5	0.5
617-78-7	Pentane, 3-ethyl												
617-94-7	Benzenemethanol, à,à-dimethyl-								0.3	0.3	0.3	0.3	0.3

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620-14-4	Benzene, 1-ethyl-3-methyl	8.6	8	8.2	8.1	8.4	9.2	8.6	7.5	7.2	8	8.1	8.1
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)	6.4	5.8	6.2	6.2	6.4	6.9	6.4	5.8	5.6	6.2	6.3	6.3
62238-33-9	Cyclohexane, 1-ethyl-2-propyl												
6236-88-0	Cyclohexane, t-1-ethyl-4-methyl							0.9	0.9	0.9	1	1.1	1
624-16-8	4-Decanone												
624-29-3	Cyclohexane, 1,4-dimethyl, cis	0.3	0.2	0.3	0.3	0.3	0.3						
625-27-4	2-Pentene, 2-methyl	0.7	0.5	0.7	0.8	0.8	0.7						
626-38-0	2-Pentanol, acetate												
629-50-5	Tridecane	0.4	0.3	0.3	0.2		0.4	0.2	0.3	0.5	0.5	0.4	0.5
629-59-4	Tetradecane	0.1	0.2								0.2		
629-62-9	Pentadecane	0.2	0.1						0.1	0.3	0.2		
629-78-7	Heptadecane	0.1	0.1								0.1		
629-82-3	Octane, 1,1'-oxybis	0.2	0.3						0.2	0.2	0.3	0.1	
629-92-5	Nonadecane	0.1											
638-04-0	Cyclohexane, c-1,3-dimethyl							0.3	0.3	0.3	0.3	0.3	0.3
64-17-5	Ethanol						0.1						0.1
64-18-6	Formic acid (Methanoic acid)												
64-19-7	Acetic acid	1.7	1.7	2.1	3.3	4	3.5	3.6	3.5	4.9	4.8	2.1	3.6
6418-43-5	Hexadecane, 3-methyl												
646-04-8	2-Pentene, (E)-		0.4	0.3									
66-25-1	Hexanal	22.4	21.4	23.7	21.7	22.4	21.4	23.4	22.1	22.4	23.9	22.8	21.2
6682-71-9	1H-Indene, 2,3-dihydro-4,7-dimethyl			0.2	0.2	0.3	0.4	0.3	0.4	0.4			
67-63-0	2-Propanol (Isopropanol)						2						1.6
67-64-1	Acetone												
68284-24-2	Cycloheptane, 1,3,5-tris(methylene)-	3											
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)	0.6	0.3	0.4	0.2	0.3	0.6	0.3	0.5	0.9	0.8	0.7	0.6
6876-23-9	Cyclohexane, t-1,2-dimethyl							1.1	1.1	1	1.1	1.3	1.1
690-08-4	2-Pentene, 4,4-dimethyl, (E)												
691-38-3	2-Pentene, 4-methyl, (Z)				0.1	0.1							
693-89-0	Cyclopentene, 1-methyl	0.7	0.6	0.7	0.8	0.8	0.9	0.8	0.6	0.6	0.7	0.8	0.7
6975-98-0	Decane, 2-methyl												
71-36-3	1-Butanol (N-Butyl alcohol)	3.1	3.5	4.4	5	3.4	3	2.4	3.1	2.9	3.9	4.7	3
71-41-0	1-Pentanol (N-Pentyl alcohol)	4.1	4	4.5	4.3	4.3	4.4	4.5	4.4	4.3	4.6	4.7	4.3
71-43-2	Benzene	6.9	5.5	6.7	6.7	6.9	6.9	7	6	5.7	6.3	9.5	6.2
7146-60-3	Octane, 2,3-dimethyl							0.6	0.6	0.6	0.7	0.7	
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)												
7319-23-5	3-Hexen-2,5-diol												
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl	0.6			0.2				0.7				
7379-12-6	3-Hexanone, 2-methyl												
7452-79-1	Butanoic acid, 2-methyl-, ethyl ester	0.8	0.8	1									
75-15-0	Carbon disulfide												
76-49-3	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, endo (Bornyl					0.1							
763-93-9	3-Hexen-2-one												
764-13-6	2,4-Hexadiene, 2,5-dimethyl												
768-49-0	1-Phenyl-1-propene, 2-methyl	1.7	1.5	0.8			1.8	0.9	1.6	1.6	1.7	1.7	1.7
7688-21-3	2-Hexene, (Z)	0.7	0.6	0.7	0.6	0.8	0.8	0.7	0.6	0.6	0.7	0.7	0.7
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	0.8	0.6	0.3	0.2	0.3	0.7	0.4	0.5	1.6	1.3	1.3	1.4
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro												
7779-30-8	1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-												0.1
78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-												
78-78-4	Butane, 2-methyl (Isopentane)	1	0.9	1.3	1.4	0.7	0.9	0.9	0.8	0.8	1.1	0.9	0.8
78-79-5	1,3-Butadiene, 2-methyl	0.9	1	1.1	1.4	0.6	0.7	1.1	0.8	0.6	0.8	0.9	0.6
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)	0.5	0.6	0.8	1.1	0.5	0.4	0.3	0.5	0.4	0.6	0.7	0.4
78-84-2	Propanal, 2-methyl (Isobutanal)	2.1	2	2.4	2.5	2.5	2.3	2.3	2.4	2	2.1	2.3	2.2
78-85-3	2-Propenal, 2-methyl												
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)	1.5	1.8	2	2.2							2.1	
78-94-4	Methyl vinyl ketone (3-Buten-2-one)												
79-09-4	Propanoic acid	0.2				0.3			0.2	0.3	0.4		0.3
79-20-9	Acetate, methyl (Acetic acid, methyl ester)												
79-31-2	Propanoic acid, 2-methyl												
80-54-6	Lilial									0.2			0.1
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	46.8	44.8	52.4	51.6	53.3	47.9	49.9	47.2	50.1	54	54.3	47.9
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)		0.3	0.4	0.4	0.4	36.4		0.3	0.4	0.4	0.4	29.2
821-95-4	1-Undecene												
824-90-8	1-Phenyl-1-butene	1.5	1.2	1.2	1.1	1.3	1.5						
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)	0.3	0.2	0.2		0.2	0.2	0.2	0.2				0.2
870-82-6	Eucalyptol												
871-83-0	Nonane, 2-methyl			0.6									
874-35-1	1H-Indene, 2,3-dihydro-5-methyl							1.4	1.5	2.3	2.4	2.6	2.5
89-74-7	Ethanone, 1-(2,4-dimethylphenyl)-	0.6											
90-12-0	Naphthalene, 1-methyl							0.1		0.2	0.2		
91-17-8	Naphthalene, decahydro-	2.4	1.4	1.6		1.6	2.7						
91-20-3	Naphthalene	1.9	1.6	1.4	1.1	1.5	1.9	1.6	1.8	1.7	1.9	2	2
91-57-6	Naphthalene, 2-methyl	0.2	0.1			0.1	0.2	0.5	0.1	1.1	0.9	1	
92-52-4	1,1'-Biphenyl												
922-62-3	2-Pentene, 3-methyl, cis		0.3	0.4	0.5	0.5	0.5	1.1	0.9	0.9	1.2	1.2	1.2
922-63-4	2-Ethylacrolein	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		0.3
92618-89-8	Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester												
930-18-7	Cyclopropane, 1,2-dimethyl, cis	0.6	0.6	1	1.6	0.2					1	1	
930-27-8	Furan, 3-methyl												
933-12-0	Cyclohexene, 3,3,5-trimethyl												
934-80-5	Benzene, 4-ethyl-1,2-dimethyl	1.3	1.2	1.8	0.9	1.8	1.4	1.3	1.3	1.3	1.3	1.3	1.5
95-16-9	Benzothiazole	0.9	0.7	0.7	0.6	0.7	0.8	0.7	0.9	0.8	0.8	0.8	0.8
95-47-6	Xylene, ortho	13.4	11.9	12.6	12.8	13.2	13.8	13.1	11.3	11	12.3	12.4	12.2
95-93-2	Benzene, 1,2,4,5-tetramethyl	2.9	2.5	2.6	2.4	2.6	2.9	0.7		2.6	2.9	2.9	2.9
96-14-0	Pentane, 3-methyl	1.9	1.7	2.1	2.1	2.3	2.1	2	1.7	1.9	2.2	2.2	2
96-29-7	2-Butanone, oxime	0.4											
96-37-7	Cyclopentane, methyl	1.3	1.2	1.5	1.6	1.7	1.6	1.3	1.2	1.2	1.5	1.8	1.4
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)												
97-72-3	Propanoic acid, 2-methyl-, anhydride												
98-00-0	2-Furanmethanol												
98-01-1	Furfural (2-Furaldehyde)	2.3	2.1	2.2	2.6	2.5	2.6	2.2	2.4	3.3	2.6	2.7	2.5
98-55-5	3-Cyclohexene-1-methanol, à,à,4-trimethyl												
98-82-8	Benzene, 1-methylethyl (Cumene)												
99-71-8	Phenol, 4-(1-methylpropyl)-						0.2						
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-												

Outside VOC Data

cas_number	chemical	510	16339-050AA SV1 (1.000) c_526174	16339-050AA SV2 (2.000) c_526175	16339-050AA SV3 (3.000) c_526176	16339-050AA SV4 (4.000) c_526177	16339-050AA SV5 (5.000) c_526178	16339-050AA SV6 (6.000) c_526179
			Outside Air					
		Home Identification	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90	Unit 90
		Sample Location	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3	Loc 3
		Location Description	Outside	Outside	Outside	Outside	Outside	Outside
		Start-End Times	11:35-15:35	15:35-19:35	19:35-23:55	23:55-03:45	03:45-07:45	07:45-12:45
	TVOC (ug/m3)		**8.1**	**6.6**	**9.2**	**14.7**	**11.6**	**39.4**
100-18-5	Benzene, 1,4-bis(1-methylethyl)-							
100-41-4	Benzene, ethyl		0.1	0.1	0.1	0.2	0.3	0.1
100-42-5	Styrene		0.1		0.1			0.1
100-52-7	Benzaldehyde		0.1	0.3	0.1	0.2	0.2	0.1
1000131-87-	Propanal, 2-methyl-3-phenyl-							
1000131-87-6	Propanal, 2-methyl-3-phenyl-							
1000299-11-8	Butanoic acid, 3-methylbut-2-enyl ester							
1000350-93-6	1,3,5-Triazine-2(1H)-thione, tetrahydro-5-[(4-methoxyphenyl)							
1003-19-6	Cyclopropane, 1,1-diethyl							
101-84-8	Benzene, 1,1'-oxybis- (Diphenyl ether)							
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (Octyl acrylate)							
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester							
103-65-1	Benzene, propyl		0.1			0.1	0.2	0.1
103-70-8	Formamide, N-phenyl-							
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)							
104-76-7	1-Hexanol, 2-ethyl					0.2		
105-82-8	Propane, 1,1'-[ethylidenebis(oxy)]bis							
10574-36-4	2-Hexene, 3-methyl-, (Z)							
10574-37-5	2-Pentene, 2,3-dimethyl							
106-42-3	Xylene (para and/or meta)		0.2	0.1		0.6	0.8	0.2
106-46-7	Benzene, 1,4-dichloro					0.1	0.1	
107-02-8	Acrolein (2-Propenal)					0.1		
107-06-2	Ethane, 1,2-dichloro							
107-13-1	2-Propenenitrile (Acrylonitrile)							0.1
107-21-1	1,2-Ethanediol (Ethylene glycol)							
107-83-5	Pentane, 2-methyl					0.4	0.5	
107-87-9	2-Pentanone							
107-92-6	Butanoic acid							
1070-66-2	2-n-Butylacrolein							
1071-81-4	Hexane, 2,2,5,5-tetramethyl							
1072-05-5	Heptane, 2,6-dimethyl							
1074-17-5	Benzene, 1-methyl-2-propyl							
1074-43-7	Benzene, 1-methyl-3-propyl							
1074-55-1	Benzene, 1-methyl-4-propyl							
1075-22-5	1H-Indene, 2,3-dihydro-5,6-dimethyl							
108-08-7	Pentane, 2,4-dimethyl							
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)				0.1			1.9
108-38-3	Xylene (meta and/or para)							
108-65-6	1-Methoxy-2-propyl acetate				0.1			
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)					0.3	0.4	0.1
108-87-2	Cyclohexane, methyl		0.1		0.1	0.3	0.1	0.1
108-88-3	Toluene (Methylbenzene)		0.6	0.4	0.7	1.2	1.9	0.3
109-08-0	Pyrazine, methyl							
109-60-4	Acetic acid, propyl ester (Propyl acetate)							
109-66-0	Pentane					0.6	0.9	
109-68-2	2-Pentene							
110-43-0	2-Heptanone				0.1			
110-54-3	Hexane		0.2	0.1	0.2	0.3	0.4	
110-62-3	Pentanal				0.2			
110-80-5	Ethanol, 2-ethoxy							
110-82-7	Cyclohexane					0.1		
110-83-8	Cyclohexene							
110-86-1	Pyridine							
110-93-0	5-Hepten-2-one, 6-methyl			0.2	0.6			
111-15-9	Ethanol, 2-ethoxy-, acetate (2-Ethoxyethyl acetate)							
111-27-3	1-Hexanol (N-Hexyl alcohol)							
111-46-6	Diethylene glycol (2,2'-oxybisethanol)							
111-65-9	Octane					0.1	0.1	
111-66-0	1-Octene			0.2	0.1	0.1		0.2
111-70-6	1-Heptanol							
111-71-7	Heptanal (Heptaldehyde)			0.1	0.2	0.1		
111-76-2	Ethanol, 2-butoxy							
111-84-2	Nonane				0.1	0.1	0.1	
111-87-5	1-Octanol							
112-30-1	1-Decanol (N-Decyl alcohol)							
112-31-2	Decanal				0.1	0.1		
112-40-3	Dodecane							
112-41-4	1-Dodecene							
1120-21-4	Undecane					0.1		
1137-12-8	1,2,4-Methenoazulene, decahydro-1,5,5,8a-tetramethyl-, [1S-(1							
1191-99-7	Furan, 2,3-dihydro							
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-							
122-03-2	Benzaldehyde, 4-(1-methylethyl)							
123-05-7	Hexanal, 2-ethyl				0.1	0.1	0.1	
123-11-5	Benzaldehyde, 4-methoxy-							
123-19-3	4-Heptanone							
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)							
123-42-2	2-Pentanone, 4-hydroxy-4-methyl-							

123-51-3	1-Butanol, 3-methyl						
123-75-1	Pyrrolidine						
123-86-4	Acetate, butyl	0.1	0.1				
124-11-8	1-Nonene	0.4	0.2	0.2			0.2
124-13-0	Octanal		0.1	0.3	0.2		
124-18-5	Decane						
124-19-6	Nonyl aldehyde (Nonanal)		0.1	0.4	0.2		
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)	0.1			0.1	0.1	
127-51-5	à-Isomethyl ionone						
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)		0.1	0.2	0.2		0.1
128-37-0	2,6-Di-tert-butyl-4-methylphenol (BHT)						
128-39-2	Phenol, 2,6-bis(1,1-dimethylethyl)						
13151-04-7	1-Heptene, 5-methyl						
13151-34-3	Decane, 3-methyl						
13231-81-7	1-Hexanol, 3-methyl						
13287-23-5	Heptadecane, 8-methyl-						
13466-78-9	3-Carene			0.1		0.1	
13491-79-7	Cyclohexanol, 2-(1,1-dimethylethyl)						
135-01-3	Benzene, 1,2-diethyl						
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)	0.1	0.3	0.2	0.2		0.1
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)						
140-67-0	Estragole (4-Allylanisole)						
141-63-9	Pentasiloxane, dodecamethyl						
141-78-6	Acetate, ethyl						
141-79-7	3-Penten-2-one, 4-methyl		0.1	0.1			
141-93-5	Benzene, 1,3-diethyl						
142-62-1	Hexanoic acid						
142-82-5	Heptane	0.3	0.2		0.9	0.3	0.2
143-08-8	1-Nonanol						
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl						
1455-20-5	Thiophene, 2-butyl						
14686-13-6	2-Heptene, (E)						
1515-79-3	5,5-Dimethyl-1,3-hexadiene						
1528-25-2	4-Heptanone, 3-ethyl						
15356-70-4	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2á,5à)-(+/-) (Me						
1576-87-0	t-2-Pentenal						
15869-92-8	Octane, 3,4-dimethyl						
15870-10-7	1-Heptene, 2-methyl						
1595-16-0	Benzene, 1-methyl-4-(1-methylpropyl)-						
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl						
16325-63-6	2,4,4-Trimethyl-1-pentanol	0.1					
1640-89-7	Cyclopentane, ethyl				0.2		
16491-15-9	Cyclopentene, 1,5-dimethyl						
16746-86-4	2,3-Dimethyl-1-hexene						
1678-97-3	Cyclohexane, 1,2,3-trimethyl						
16982-00-6	Benzene, 1-methyl-4-(1,2,2-trimethylcyclopentyl)-, (R)-						
17066-67-0	Naphthalene, decahydro-4a-methyl-1-methylene-7-(1-methyleth						
17081-21-9	Propane, 1,3-dimethoxy-						
17302-32-8	Nonane, 3,7-dimethyl						
17312-57-1	Dodecane, 3-methyl						
17374-18-4	Tetrahydro-1,3-oxazine-2-thione						
17498-71-4	Benzene, (2-methyl-1-methylenepropyl)-						
1750-51-2	Naphthalene, decahydro-1,6-dimethyl-						
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl						
17851-27-3	Benzene, 1-ethyl-2,4,5-trimethyl						
1795-15-9	Cyclohexane, octyl						
18479-58-8	7-Octen-2-ol, 2,6-dimethyl						
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate						
18669-52-8	1,4-Hexadiene, 2,3-dimethyl			0.1			
18794-77-9	Thiophene, 2-hexyl						
19037-72-0	Cyclopentene, 4,4-dimethyl-						
19549-87-2	1-Heptene, 2,4-dimethyl						
20027-77-4	Naphthalene, 1,2,3,4-tetrahydro-5,6-dimethyl-						
20279-29-2	Phenyl isobutyrate						
203-65-6	5H-Benzo[def]carbazole						
2039-89-6	Styrene, 2,5-dimethyl						
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-						
21693-51-6	Naphthalene, 1,2,3,4-tetrahydro-1,5,8-trimethyl-						
2207-03-6	Cyclohexane, 1,3-dimethyl, trans						
2207-04-7	Cyclohexane, 1,4-dimethyl, trans						
2213-23-2	Heptane, 2,4-dimethyl						
2213-32-3	1-Pentene, 2,4-dimethyl						
2216-30-0	Heptane, 2,5-dimethyl						
2234-20-0	Styrene, 2,4-dimethyl						
2402-06-4	Cyclopropane, t-1,2-dimethyl						
2437-56-1	1-Tridecene						
2452-99-5	Cyclopentane, 1,2-dimethyl			0.1			
2453-00-1	Cyclopentane, 1,3-dimethyl						
24720-09-0	à-Damascone (2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-						
2532-58-3	Cyclopentane, 1,3-dimethyl, cis						
27522-11-8	1-Pentanol, 2-ethyl						
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-methyl						
287-92-3	Cyclopentane	0.6	0.4	0.2			0.3
292-64-8	Cyclooctane	0.3					
2958-76-1	Naphthalene, decahydro-2-methyl						
3208-16-0	Furan, 2-ethyl						
3221-61-2	Octane, 2-methyl						
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)						

3333-13-9	Benzene, 1-methyl-4-(2-propenyl)						
3404-65-7	3-Methyl-3-hexene,c&t						
3522-94-9	Hexane, 2,2,5-trimethyl				0.2	0.1	0.1
3524-73-0	1-Hexene, 5-methyl						
35507-09-6	7-Hexadecene, (Z)-						
3853-83-6	1H-Benzocycloheptene, 2,4a,5,6,7,8,9,9a-octahydro-3,5,5-trime						
3856-25-5	Copaene						
3944-36-3	2-Propanol, 1-(1-methylethoxy)						
40117-45-1	Heptane, 2,2,6,6-tetramethyl						
4050-45-7	2-Hexene, (E)						
41436-42-4	2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-						
4175-54-6	Naphthalene, 1,2,3,4-tetrahydro-1,4-dimethyl						
4218-48-8	Benzene, 1-ethyl-4-(1-methylethyl)						
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl						
464-17-5	Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl						
464-45-9	L-borneol (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-,(1S-endo)-						
469-61-4	Cedrene, à						
470-40-6	Thujopsene						
470-82-6	Eucalyptol				0.2	0.1	0.1
4706-90-5	Benzene, 1,3-dimethyl-5-(1-methylethyl)						
475-20-7	Longifolene						
4798-45-2	1-Penten-3-ol, 4-methyl-						
488-23-3	Benzene, 1,2,3,4-tetramethyl					0.1	
491-01-0	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5á)-						
491-02-1	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5à)-						
4923-78-8	Cyclohexane, 1-ethyl-2-methyl, trans						
4926-78-7	Cyclohexane, c-1-ethyl-4-methyl						
493-02-7	t-Decahydronaphthalene						
496-11-7	Indane					0.1	
4994-16-5	4-Phenylcyclohexene						
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one						
513-35-9	2-Butene, 2-methyl						
5131-66-8	2-Propanol, 1-butoxy						
51655-64-2	Nonane, 3-methylene						
52253-93-7	Homomenthyl salicylate						
527-53-7	Benzene, 1,2,3,5-tetramethyl					0.1	
540-97-6	Cyclohexasiloxane, dodecamethyl						
541-02-6	Cyclopentasiloxane, decamethyl						
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate						
542-28-9	2H-Pyran-2-one, tetrahydro-			0.1			
544-76-3	Hexadecane (Cetane)						
554-12-1	Propanoic acid, methyl ester						0.1
555-10-2	á-Phellandrene						
556-67-2	Cyclotetrasiloxane, octamethyl			0.1			0.1
560-21-4	Pentane, 2,3,3-trimethyl	0.1	0.1	0.1	0.3	0.2	0.1
563-46-2	1-Butene, 2-methyl						
563-79-1	2-Butene, 2,3-dimethyl						
565-59-3	Pentane, 2,3-dimethyl				0.3		
565-69-5	3-Pentanone, 2-methyl						
565-75-3	Pentane, 2,3,4-trimethyl	0.1			0.2	0.1	0.1
565-80-0	3-Pentanone, 2,4-dimethyl			0.1			
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-						
57-55-6	1,2-Propanediol (Propylene glycol)						
5794-03-6	(+)-Camphene			0.1			
585-34-2	Phenol, m-tert-butyl						
586-62-9	Cyclohexene, 1-methyl-4-(1-methylethylidene)						
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)						
589-34-4	Hexane, 3-methyl	0.4	0.3	0.1	2	0.4	0.3
589-38-8	3-Hexanone (Ethyl propyl ketone)						
589-43-5	Hexane, 2,4-dimethyl					0.1	
589-81-1	Heptane, 3-methyl				0.1	0.1	
591-76-4	Hexane, 2-methyl	0.7	0.5		1.7		0.5
591-78-6	2-Hexanone						
591-93-5	1,4-Pentadiene						
5911-04-6	Nonane, 3-methyl						
592-13-2	Hexane, 2,5-dimethyl				0.1		
592-27-8	Heptane, 2-methyl					0.1	
592-76-7	1-Heptene	0.2	0.1		0.2	0.2	0.2
592-77-8	2-Heptene						
593-45-3	Octadecane						
5989-08-2	Tricyclo[5.4.0.0(2,8)]undec-9-ene, 2,6,6,9-tetramethyl-						
6004-38-2	4,7-Methano-1H-indene, octahydro						
6094-02-6	1-Hexene, 2-methyl-						
611-14-3	Benzene, 1-ethyl-2-methyl (2-Ethyltoluene)					0.1	
6131-25-5	Heptane, 3-methyl				0.1	0.1	
616-12-6	2-Pentene, 3-methyl, (E)						
617-78-7	Pentane, 3-ethyl				0.3		
617-94-7	Benzenemethanol, à,à-dimethyl-						
620-14-4	Benzene, 1-ethyl-3-methyl	0.1		0.1	0.2	0.4	0.1
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)	0.1		0.1	0.2	0.3	
62238-33-9	Cyclohexane, 1-ethyl-2-propyl						
6236-88-0	Cyclohexane, t-1-ethyl-4-methyl						
624-16-8	4-Decanone						
624-29-3	Cyclohexane, 1,4-dimethyl, cis						
625-27-4	2-Pentene, 2-methyl						
626-38-0	2-Pentanol, acetate						
629-50-5	Tridecane						
629-59-4	Tetradecane						

629-62-9	Pentadecane						
629-78-7	Heptadecane						
629-82-3	Octane, 1,1'-oxybis						
629-92-5	Nonadecane						
638-04-0	Cyclohexane, c-1,3-dimethyl						
64-17-5	Ethanol	0.1					0.1
64-18-6	Formic acid (Methanoic acid)		0.1				
64-19-7	Acetic acid	0.3	0.7	0.7	0.2		0.3
6418-43-5	Hexadecane, 3-methyl						
646-04-8	2-Pentene, (E)-						
66-25-1	Hexanal	0.2	0.2	0.4	0.1	0.1	0.2
6682-71-9	1H-Indene, 2,3-dihydro-4,7-dimethyl						
67-63-0	2-Propanol (Isopropanol)						1.4
67-64-1	Acetone	1.3	0.8	0.7			2.4
68284-24-2	Cycloheptane, 1,3,5-tris(methylene)-						
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)						
6876-23-9	Cyclohexane, t-1,2-dimethyl						
690-08-4	2-Pentene, 4,4-dimethyl, (E)						
691-38-3	2-Pentene, 4-methyl, (Z)						
693-89-0	Cyclopentene, 1-methyl						
6975-98-0	Decane, 2-methyl						
71-36-3	1-Butanol (N-Butyl alcohol)	0.1		0.2			0.1
71-41-0	1-Pentanol (N-Pentyl alcohol)						
71-43-2	Benzene			0.4		0.9	
7146-60-3	Octane, 2,3-dimethyl						
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)						
7319-23-5	3-Hexen-2,5-diol		0.1				
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl						
7379-12-6	3-Hexanone, 2-methyl						
7452-79-1	Butanoic acid, 2-methyl-, ethyl ester						
75-15-0	Carbon disulfide						0.1
76-49-3	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, endo (Borny						
763-93-9	3-Hexen-2-one						
764-13-6	2,4-Hexadiene, 2,5-dimethyl						
768-49-0	1-Phenyl-1-propene, 2-methyl						
7688-21-3	2-Hexene, (Z)						
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate						
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro						
7779-30-8	1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-						
78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-						
78-78-4	Butane, 2-methyl (Isopentane)	0.2		0.1	0.1	0.1	0.1
78-79-5	1,3-Butadiene, 2-methyl	0.5	0.1	0.1		0.1	0.3
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)						
78-84-2	Propanal, 2-methyl (Isobutanal)			0.1			
78-85-3	2-Propenal, 2-methyl						
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)			0.1			0.2
78-94-4	Methyl vinyl ketone (3-Buten-2-one)	0.2	0.2	0.2			0.2
79-09-4	Propanoic acid						
79-20-9	Acetate, methyl (Acetic acid, methyl ester)						
79-31-2	Propanoic acid, 2-methyl						
80-54-6	Lilial						
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)	0.2	0.2	0.6	0.4	0.4	0.2
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester						28.3
821-95-4	1-Undecene						
824-90-8	1-Phenyl-1-butene						
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)						
870-82-6	Eucalyptol				0.2	0.1	0.1
871-83-0	Nonane, 2-methyl						
874-35-1	1H-Indene, 2,3-dihydro-5-methyl						
89-74-7	Ethanone, 1-(2,4-dimethylphenyl)-						
90-12-0	Naphthalene, 1-methyl						
91-17-8	Naphthalene, decahydro-						
91-20-3	Naphthalene						
91-57-6	Naphthalene, 2-methyl						
92-52-4	1,1'-Biphenyl						
922-62-3	2-Pentene, 3-methyl, cis						
922-63-4	2-Ethylacrolein						
92618-89-8	Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester						
930-18-7	Cyclopropane, 1,2-dimethyl, cis						
930-27-8	Furan, 3-methyl						
933-12-0	Cyclohexene, 3,3,5-trimethyl						
934-80-5	Benzene, 4-ethyl-1,2-dimethyl						
95-16-9	Benzothiazole						
95-47-6	Xylene, ortho	0.1	0.1	0.4	0.2	0.2	0.1
95-93-2	Benzene, 1,2,4,5-tetramethyl					0.2	
96-14-0	Pentane, 3-methyl				0.1	0.2	
96-29-7	2-Butanone, oxime						
96-37-7	Cyclopentane, methyl				0.3	0.2	
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)						
97-72-3	Propanoic acid, 2-methyl-, anhydride						
98-00-0	2-Furanmethanol						
98-01-1	Furfural (2-Furaldehyde)		0.1	0.1			
98-55-5	3-Cyclohexene-1-methanol, à,à,4-trimethyl						
98-82-8	Benzene, 1-methylethyl (Cumene)					0.3	
99-71-8	Phenol, 4-(1-methylpropyl)-						
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-						

Blanks VOC Data

cas_number	chemical	510	16339-010AA SV0F (7.000) c_526136	16339-020AA SV0F (7.000) c_526143	16339-030AA SV0F (7.000) c_526155	16339-040AA SV0F (7.000) c_526166	16339-050AA SV0F (7.000) c_526173
	Home Identification		Unit 91	Unit 91	Unit 90	Uniit 90	Unit 90
	Sample Location		Blank	Blank	Blank	Blank	Blank
	Location Description		1st FL LR	2nd FL BR	2nd FL LR	1st FL BR	Outside
	Start-End Times						
	TVOC (ug/m3)		**3.0**	**7.3**	**0.1**	**0.1**	**1.2**
100-18-5	Benzene, 1,4-bis(1-methylethyl)-						
100-41-4	Benzene, ethyl						
100-42-5	Styrene						
100-52-7	Benzaldehyde						
1000131-87-	Propanal, 2-methyl-3-phenyl-						
1000131-87-6	Propanal, 2-methyl-3-phenyl-						
1000299-11-8	Butanoic acid, 3-methylbut-2-enyl ester						
1000350-93-6	1,3,5-Triazine-2(1H)-thione, tetrahydro-5-[(4-methoxyphenyl)						
1003-19-6	Cyclopropane, 1,1-diethyl						
101-84-8	Benzene, 1,1'-oxybis- (Diphenyl ether)						
103-11-7	2-Propenoic acid, 2-ethylhexyl ester (Octyl acrylate)						
103-23-1	Hexanedioic acid, bis(2-ethylhexyl) ester						
103-65-1	Benzene, propyl						
103-70-8	Formamide, N-phenyl-						
104-55-2	Cinnamic aldehyde (2-Propenal, 3-phenyl-)						
104-76-7	1-Hexanol, 2-ethyl						
105-82-8	Propane, 1,1'-[ethylidenebis(oxy)]bis						
10574-36-4	2-Hexene, 3-methyl-, (Z)						
10574-37-5	2-Pentene, 2,3-dimethyl						
106-42-3	Xylene (para and/or meta)			0.1			
106-46-7	Benzene, 1,4-dichloro						
107-02-8	Acrolein (2-Propenal)						0.1
107-06-2	Ethane, 1,2-dichloro						
107-13-1	2-Propenenitrile (Acrylonitrile)						
107-21-1	1,2-Ethanediol (Ethylene glycol)						
107-83-5	Pentane, 2-methyl						
107-87-9	2-Pentanone						
107-92-6	Butanoic acid						
1070-66-2	2-n-Butylacrolein						
1071-81-4	Hexane, 2,2,5,5-tetramethyl			0.1			
1072-05-5	Heptane, 2,6-dimethyl						
1074-17-5	Benzene, 1-methyl-2-propyl						
1074-43-7	Benzene, 1-methyl-3-propyl						
1074-55-1	Benzene, 1-methyl-4-propyl						
1075-22-5	1H-Indene, 2,3-dihydro-5,6-dimethyl						
108-08-7	Pentane, 2,4-dimethyl						
108-10-1	2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)						
108-38-3	Xylene (meta and/or para)						
108-65-6	1-Methoxy-2-propyl acetate						
108-67-8	Benzene, 1,3,5-trimethyl (Mesitylene)						
108-87-2	Cyclohexane, methyl		0.1	0.2			
108-88-3	Toluene (Methylbenzene)		0.1	0.2			
109-08-0	Pyrazine, methyl						
109-60-4	Acetic acid, propyl ester (Propyl acetate)						
109-66-0	Pentane		0.5	0.8			
109-68-2	2-Pentene						
110-43-0	2-Heptanone						
110-54-3	Hexane						
110-62-3	Pentanal						
110-80-5	Ethanol, 2-ethoxy						
110-82-7	Cyclohexane			0.1			
110-83-8	Cyclohexene						
110-86-1	Pyridine						
110-93-0	5-Hepten-2-one, 6-methyl						
111-15-9	Ethanol, 2-ethoxy-, acetate (2-Ethoxyethyl acetate)						
111-27-3	1-Hexanol (N-Hexyl alcohol)						
111-46-6	Diethylene glycol (2,2'-oxybisethanol)						
111-65-9	Octane						
111-66-0	1-Octene						
111-70-6	1-Heptanol						
111-71-7	Heptanal (Heptaldehyde)						
111-76-2	Ethanol, 2-butoxy						
111-84-2	Nonane						
111-87-5	1-Octanol						
112-30-1	1-Decanol (N-Decyl alcohol)						
112-31-2	Decanal						
112-40-3	Dodecane						
112-41-4	1-Dodecene						
1120-21-4	Undecane						0.1
1137-12-8	1,2,4-Methenoazulene, decahydro-1,5,5,8a-tetramethyl-, [1S-(1a						

1191-99-7	Furan, 2,3-dihydro			
1196-01-6	Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-			
122-03-2	Benzaldehyde, 4-(1-methylethyl)			
123-05-7	Hexanal, 2-ethyl			
123-11-5	Benzaldehyde, 4-methoxy-			
123-19-3	4-Heptanone			
123-35-3	1,6-Octadiene,7-methyl-3-methylene (Myrcene)			
123-42-2	2-Pentanone, 4-hydroxy-4-methyl-			
123-51-3	1-Butanol, 3-methyl			
123-75-1	Pyrrolidine			
123-86-4	Acetate, butyl			
124-11-8	1-Nonene			
124-13-0	Octanal			
124-18-5	Decane			0.1
124-19-6	Nonyl aldehyde (Nonanal)			
127-18-4	Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)			
127-51-5	à-Isomethyl ionone			
127-91-3	Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)			
128-37-0	2,6-Di-tert-butyl-4-methylphenol (BHT)			
128-39-2	Phenol, 2,6-bis(1,1-dimethylethyl)			
13151-04-7	1-Heptene, 5-methyl			
13151-34-3	Decane, 3-methyl			
13231-81-7	1-Hexanol, 3-methyl			
13287-23-5	Heptadecane, 8-methyl-			
13466-78-9	3-Carene			
13491-79-7	Cyclohexanol, 2-(1,1-dimethylethyl)			
135-01-3	Benzene, 1,2-diethyl			
138-86-3	Limonene (Dipentene; 1-Methyl-4-(1-methylethyl)cyclohexene)			
140-11-4	Acetic acid, phenylmethyl ester (Benzyl acetate)			
140-67-0	Estragole (4-Allylanisole)			
141-63-9	Pentasiloxane, dodecamethyl			
141-78-6	Acetate, ethyl			
141-79-7	3-Penten-2-one, 4-methyl			
141-93-5	Benzene, 1,3-diethyl			
142-62-1	Hexanoic acid			
142-82-5	Heptane	0.2	0.6	0.1
143-08-8	1-Nonanol			
14411-56-4	Benzene, 1-(1,1-dimethylethyl)-3-ethyl			
1455-20-5	Thiophene, 2-butyl			
14686-13-6	2-Heptene, (E)			
1515-79-3	5,5-Dimethyl-1,3-hexadiene			
1528-25-2	4-Heptanone, 3-ethyl			
15356-70-4	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2á,5à)-(+/-) (Mer			
1576-87-0	t-2-Pentenal			
15869-92-8	Octane, 3,4-dimethyl			
15870-10-7	1-Heptene, 2-methyl			
1595-16-0	Benzene, 1-methyl-4-(1-methylpropyl)-			
1632-73-1	Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl			
16325-63-6	2,4,4-Trimethyl-1-pentanol			
1640-89-7	Cyclopentane, ethyl		0.1	
16491-15-9	Cyclopentene, 1,5-dimethyl			
16746-86-4	2,3-Dimethyl-1-hexene			
1678-97-3	Cyclohexane, 1,2,3-trimethyl			
16982-00-6	Benzene, 1-methyl-4-(1,2,2-trimethylcyclopentyl)-, (R)-			
17066-67-0	Naphthalene, decahydro-4a-methyl-1-methylene-7-(1-methyleth			
17081-21-9	Propane, 1,3-dimethoxy-			
17302-32-8	Nonane, 3,7-dimethyl			
17312-57-1	Dodecane, 3-methyl			
17374-18-4	Tetrahydro-1,3-oxazine-2-thione			
17498-71-4	Benzene, (2-methyl-1-methylenepropyl)-			
1750-51-2	Naphthalene, decahydro-1,6-dimethyl-			
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl			
17851-27-3	Benzene, 1-ethyl-2,4,5-trimethyl			
1795-15-9	Cyclohexane, octyl			
18479-58-8	7-Octen-2-ol, 2,6-dimethyl			
18491-15-1	2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate			
18669-52-8	1,4-Hexadiene, 2,3-dimethyl			
18794-77-9	Thiophene, 2-hexyl			
19037-72-0	Cyclopentene, 4,4-dimethyl-			
19549-87-2	1-Heptene, 2,4-dimethyl			
20027-77-4	Naphthalene, 1,2,3,4-tetrahydro-5,6-dimethyl-			
20279-29-2	Phenyl isobutyrate			
203-65-6	5H-Benzo[def]carbazole			
2039-89-6	Styrene, 2,5-dimethyl			
2142-73-6	Ethanone, 1-(2,5-dimethylphenyl)-			
21693-51-6	Naphthalene, 1,2,3,4-tetrahydro-1,5,8-trimethyl-			
2207-03-6	Cyclohexane, 1,3-dimethyl, trans			
2207-04-7	Cyclohexane, 1,4-dimethyl, trans			
2213-23-2	Heptane, 2,4-dimethyl			

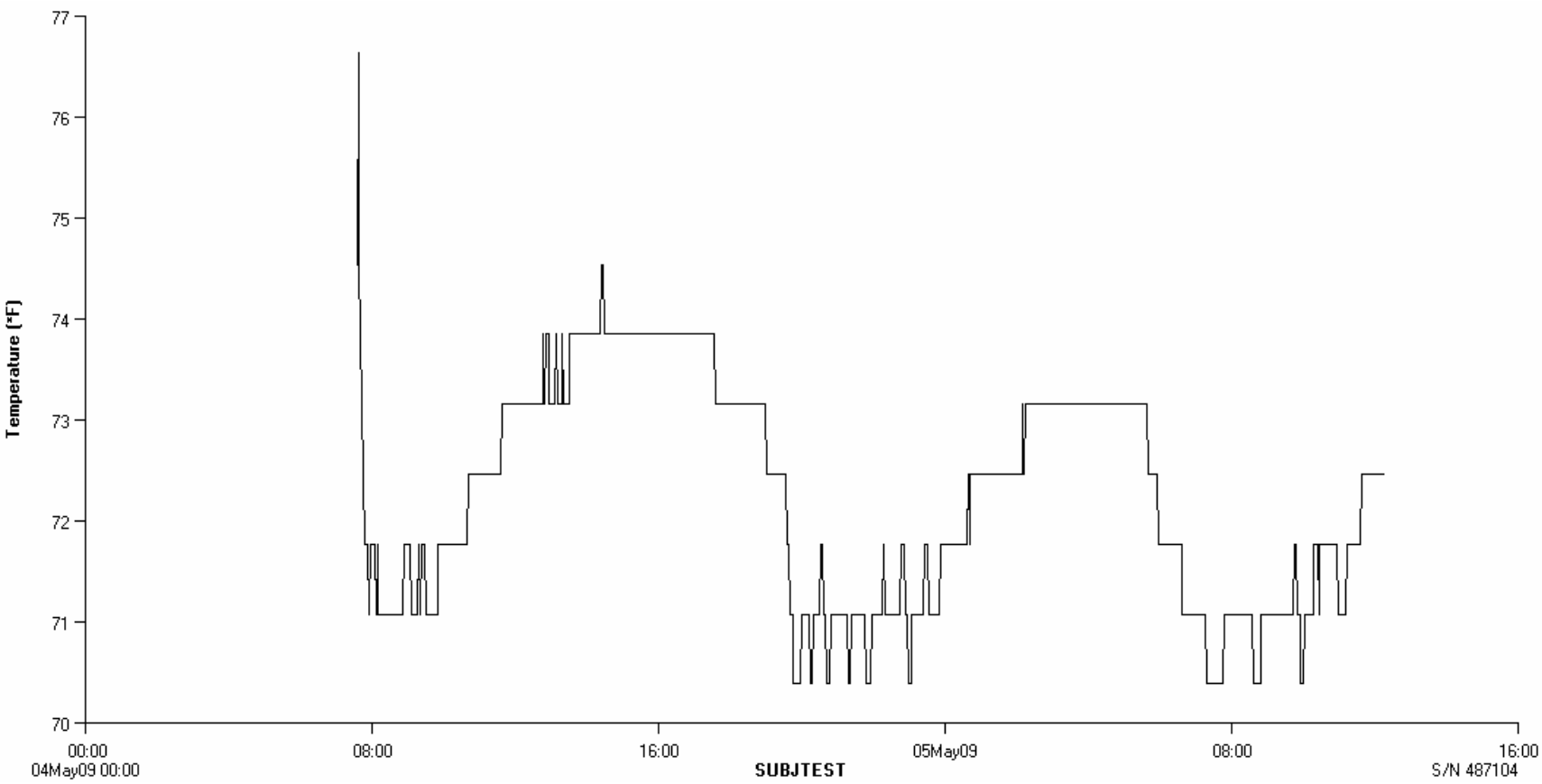
2213-32-3	1-Pentene, 2,4-dimethyl			
2216-30-0	Heptane, 2,5-dimethyl			
2234-20-0	Styrene, 2,4-dimethyl			
2402-06-4	Cyclopropane, t-1,2-dimethyl			
2437-56-1	1-Tridecene			
2452-99-5	Cyclopentane, 1,2-dimethyl		0.1	
2453-00-1	Cyclopentane, 1,3-dimethyl			
24720-09-0	à-Damascone (2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1			
2532-58-3	Cyclopentane, 1,3-dimethyl, cis			
27522-11-8	1-Pentanol, 2-ethyl			
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-methyl			
287-92-3	Cyclopentane			0.1
292-64-8	Cyclooctane			
2958-76-1	Naphthalene, decahydro-2-methyl			
3208-16-0	Furan, 2-ethyl			
3221-61-2	Octane, 2-methyl			
32210-23-4	4-tert-Butylcyclohexyl acetate (Vertenex)			
3333-13-9	Benzene, 1-methyl-4-(2-propenyl)			
3404-65-7	3-Methyl-3-hexene,c&t			
3522-94-9	Hexane, 2,2,5-trimethyl			
3524-73-0	1-Hexene, 5-methyl			
35507-09-6	7-Hexadecene, (Z)-			
3853-83-6	1H-Benzocycloheptene, 2,4a,5,6,7,8,9,9a-octahydro-3,5,5-trime			
3856-25-5	Copaene			
3944-36-3	2-Propanol, 1-(1-methylethoxy)			
40117-45-1	Heptane, 2,2,6,6-tetramethyl	0.1		
4050-45-7	2-Hexene, (E)			
41436-42-4	2-Buten-1-one, 1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-			
4175-54-6	Naphthalene, 1,2,3,4-tetrahydro-1,4-dimethyl			
4218-48-8	Benzene, 1-ethyl-4-(1-methylethyl)			
4390-04-9	Nonane, 2,2,4,4,6,8,8-heptamethyl			
464-17-5	Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl			
464-45-9	L-borneol (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-,(1S-endo)-			
469-61-4	Cedrene, à			
470-40-6	Thujopsene			
470-82-6	Eucalyptol			
4706-90-5	Benzene, 1,3-dimethyl-5-(1-methylethyl)			
475-20-7	Longifolene			
4798-45-2	1-Penten-3-ol, 4-methyl-			
488-23-3	Benzene, 1,2,3,4-tetramethyl			
491-01-0	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5á)-			
491-02-1	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1à,2à,5à)-			
4923-78-8	Cyclohexane, 1-ethyl-2-methyl, trans			
4926-78-7	Cyclohexane, c-1-ethyl-4-methyl			
493-02-7	t-Decahydronaphthalene			
496-11-7	Indane			
4994-16-5	4-Phenylcyclohexene			
50464-95-4	6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one			
513-35-9	2-Butene, 2-methyl			
5131-66-8	2-Propanol, 1-butoxy			
51655-64-2	Nonane, 3-methylene			
52253-93-7	Homomenthyl salicylate			
527-53-7	Benzene, 1,2,3,5-tetramethyl			
540-97-6	Cyclohexasiloxane, dodecamethyl			
541-02-6	Cyclopentasiloxane, decamethyl			
5413-60-5	4,7-Methano-1H-inden-6-ol, 3a,4,5,6,7,7a-hexahydro-, acetate			
542-28-9	2H-Pyran-2-one, tetrahydro-			
544-76-3	Hexadecane (Cetane)			
554-12-1	Propanoic acid, methyl ester			
555-10-2	á-Phellandrene			
556-67-2	Cyclotetrasiloxane, octamethyl			
560-21-4	Pentane, 2,3,3-trimethyl	0.1	0.3	0.1
563-46-2	1-Butene, 2-methyl			
563-79-1	2-Butene, 2,3-dimethyl			
565-59-3	Pentane, 2,3-dimethyl	0.1	0.3	
565-69-5	3-Pentanone, 2-methyl			
565-75-3	Pentane, 2,3,4-trimethyl	0.1	0.2	
565-80-0	3-Pentanone, 2,4-dimethyl			
5655-61-8	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, (1S-endo)-			
57-55-6	1,2-Propanediol (Propylene glycol)			
5794-03-6	(+)-Camphene			
585-34-2	Phenol, m-tert-butyl			
586-62-9	Cyclohexene, 1-methyl-4-(1-methylethylidene)			
5875-45-6	Phenol, 2,5-bis(1,1-dimethylethyl)			
589-34-4	Hexane, 3-methyl	0.6	1.7	0.2
589-38-8	3-Hexanone (Ethyl propyl ketone)			
589-43-5	Hexane, 2,4-dimethyl			
589-81-1	Heptane, 3-methyl			
591-76-4	Hexane, 2-methyl	0.4	1	0.1

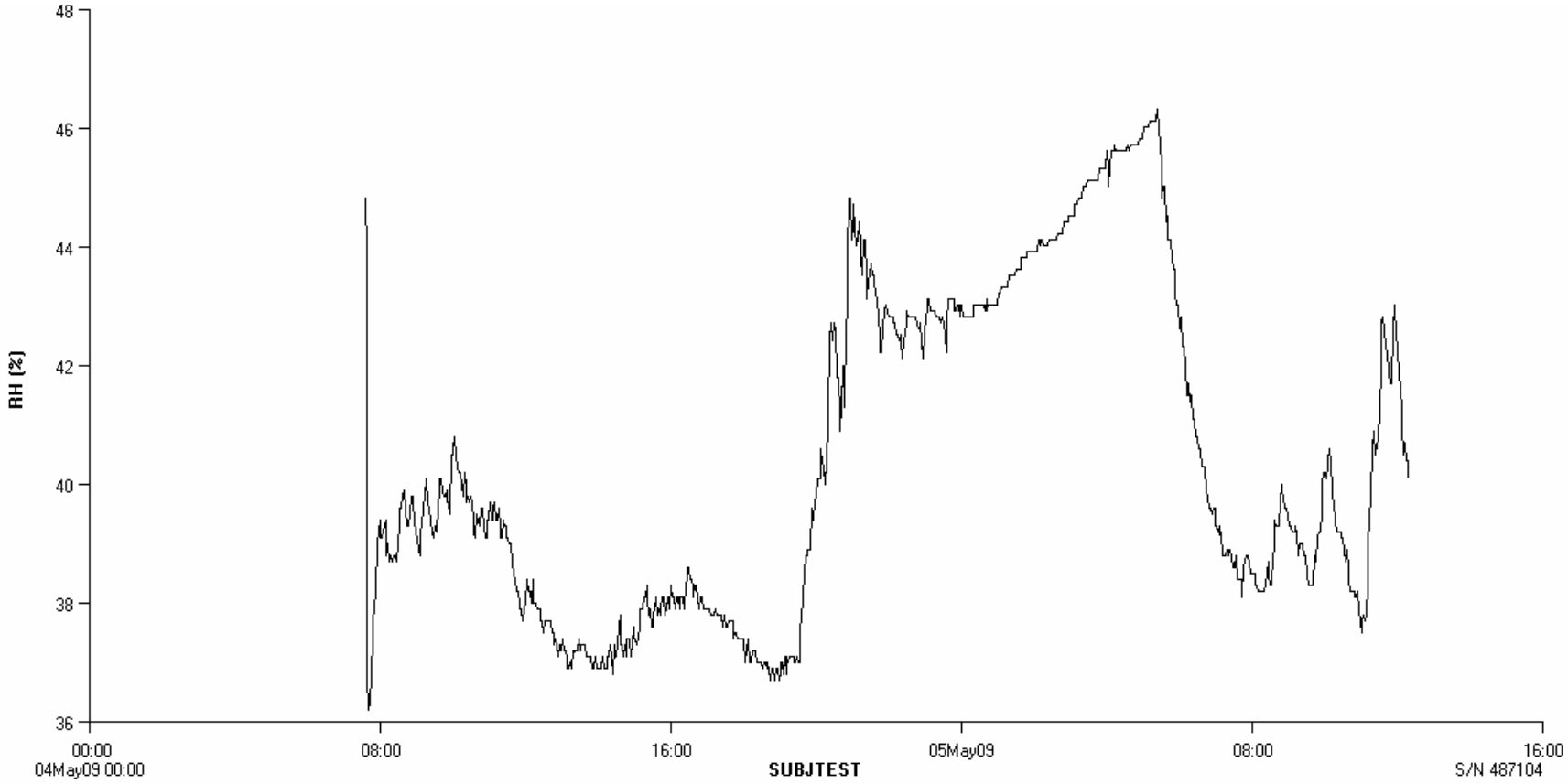
591-78-6	2-Hexanone					
591-93-5	1,4-Pentadiene					
5911-04-6	Nonane, 3-methyl					
592-13-2	Hexane, 2,5-dimethyl					
592-27-8	Heptane, 2-methyl					
592-76-7	1-Heptene					
592-77-8	2-Heptene					
593-45-3	Octadecane	0.3				
5989-08-2	Tricyclo[5.4.0.0(2,8)]undec-9-ene, 2,6,6,9-tetramethyl-					
6004-38-2	4,7-Methano-1H-indene, octahydro					
6094-02-6	1-Hexene, 2-methyl-					
611-14-3	Benzene, 1-ethyl-2-methyl (2-Ethyltoluene)					
6131-25-5	Heptane, 3-methyl					
616-12-6	2-Pentene, 3-methyl, (E)					
617-78-7	Pentane, 3-ethyl	0.1	0.3			
617-94-7	Benzenemethanol, à,à-dimethyl-					
620-14-4	Benzene, 1-ethyl-3-methyl					
622-96-8	Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)					
62238-33-9	Cyclohexane, 1-ethyl-2-propyl					
6236-88-0	Cyclohexane, t-1-ethyl-4-methyl					
624-16-8	4-Decanone					
624-29-3	Cyclohexane, 1,4-dimethyl, cis					
625-27-4	2-Pentene, 2-methyl					
626-38-0	2-Pentanol, acetate					
629-50-5	Tridecane					
629-59-4	Tetradecane					
629-62-9	Pentadecane					
629-78-7	Heptadecane					
629-82-3	Octane, 1,1'-oxybis					
629-92-5	Nonadecane					
638-04-0	Cyclohexane, c-1,3-dimethyl					
64-17-5	Ethanol					
64-18-6	Formic acid (Methanoic acid)					
64-19-7	Acetic acid		0.3			
6418-43-5	Hexadecane, 3-methyl					
646-04-8	2-Pentene, (E)-					
66-25-1	Hexanal					
6682-71-9	1H-Indene, 2,3-dihydro-4,7-dimethyl					
67-63-0	2-Propanol (Isopropanol)					
67-64-1	Acetone			0.1	0.1	0.3
68284-24-2	Cycloheptane, 1,3,5-tris(methylene)-					
6846-50-0	TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)					
6876-23-9	Cyclohexane, t-1,2-dimethyl					
690-08-4	2-Pentene, 4,4-dimethyl, (E)					
691-38-3	2-Pentene, 4-methyl, (Z)					
693-89-0	Cyclopentene, 1-methyl					
6975-98-0	Decane, 2-methyl					
71-36-3	1-Butanol (N-Butyl alcohol)					
71-41-0	1-Pentanol (N-Pentyl alcohol)					
71-43-2	Benzene					
7146-60-3	Octane, 2,3-dimethyl					
719-22-2	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)					
7319-23-5	3-Hexen-2,5-diol					
7364-19-4	Benzene, 1-(1,1-dimethylethyl)-4-ethyl					
7379-12-6	3-Hexanone, 2-methyl					
7452-79-1	Butanoic acid, 2-methyl-, ethyl ester					
75-15-0	Carbon disulfide					
76-49-3	Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-, acetate, endo (Borny					
763-93-9	3-Hexen-2-one					
764-13-6	2,4-Hexadiene, 2,5-dimethyl					
768-49-0	1-Phenyl-1-propene, 2-methyl					
7688-21-3	2-Hexene, (Z)					
77-68-9	2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate					
77-73-6	4,7-Methano-1H-indene, 3a,4,7,7a-tetrahydro					
7779-30-8	1-Penten-3-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-					
78-59-1	2-Cyclohexen-1-one, 3,5,5-trimethyl-					
78-78-4	Butane, 2-methyl (Isopentane)	0.3	0.7			0.1
78-79-5	1,3-Butadiene, 2-methyl					
78-83-1	1-Propanol, 2-methyl (Isobutyl alcohol)					
78-84-2	Propanal, 2-methyl (Isobutanal)					
78-85-3	2-Propenal, 2-methyl					
78-93-3	2-Butanone (Methyl ethyl ketone, MEK)		0.1			
78-94-4	Methyl vinyl ketone (3-Buten-2-one)					
79-09-4	Propanoic acid					
79-20-9	Acetate, methyl (Acetic acid, methyl ester)					
79-31-2	Propanoic acid, 2-methyl					
80-54-6	Lilial					
80-56-8	Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)		0.1			
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)					

821-95-4	1-Undecene	
824-90-8	1-Phenyl-1-butene	
85-44-9	Phthalic anhydride (1,3-Isobenzofurandione)	
870-82-6	Eucalyptol	
871-83-0	Nonane, 2-methyl	
874-35-1	1H-Indene, 2,3-dihydro-5-methyl	
89-74-7	Ethanone, 1-(2,4-dimethylphenyl)-	
90-12-0	Naphthalene, 1-methyl	
91-17-8	Naphthalene, decahydro-	
91-20-3	Naphthalene	
91-57-6	Naphthalene, 2-methyl	
92-52-4	1,1'-Biphenyl	
922-62-3	2-Pentene, 3-methyl, cis	
922-63-4	2-Ethylacrolein	
92618-89-8	Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester	
930-18-7	Cyclopropane, 1,2-dimethyl, cis	
930-27-8	Furan, 3-methyl	
933-12-0	Cyclohexene, 3,3,5-trimethyl	
934-80-5	Benzene, 4-ethyl-1,2-dimethyl	
95-16-9	Benzothiazole	
95-47-6	Xylene, ortho	
95-93-2	Benzene, 1,2,4,5-tetramethyl	
96-14-0	Pentane, 3-methyl	
96-29-7	2-Butanone, oxime	
96-37-7	Cyclopentane, methyl	0.1
96-48-0	2(3H)-Furanone,dihydro (Butyrolactone)	
97-72-3	Propanoic acid, 2-methyl-, anhydride	
98-00-0	2-Furanmethanol	
98-01-1	Furfural (2-Furaldehyde)	
98-55-5	3-Cyclohexene-1-methanol, à,à,4-trimethyl	
98-82-8	Benzene, 1-methylethyl (Cumene)	
99-71-8	Phenol, 4-(1-methylpropyl)-	
995-82-4	Hexasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11-dodecamethyl-	

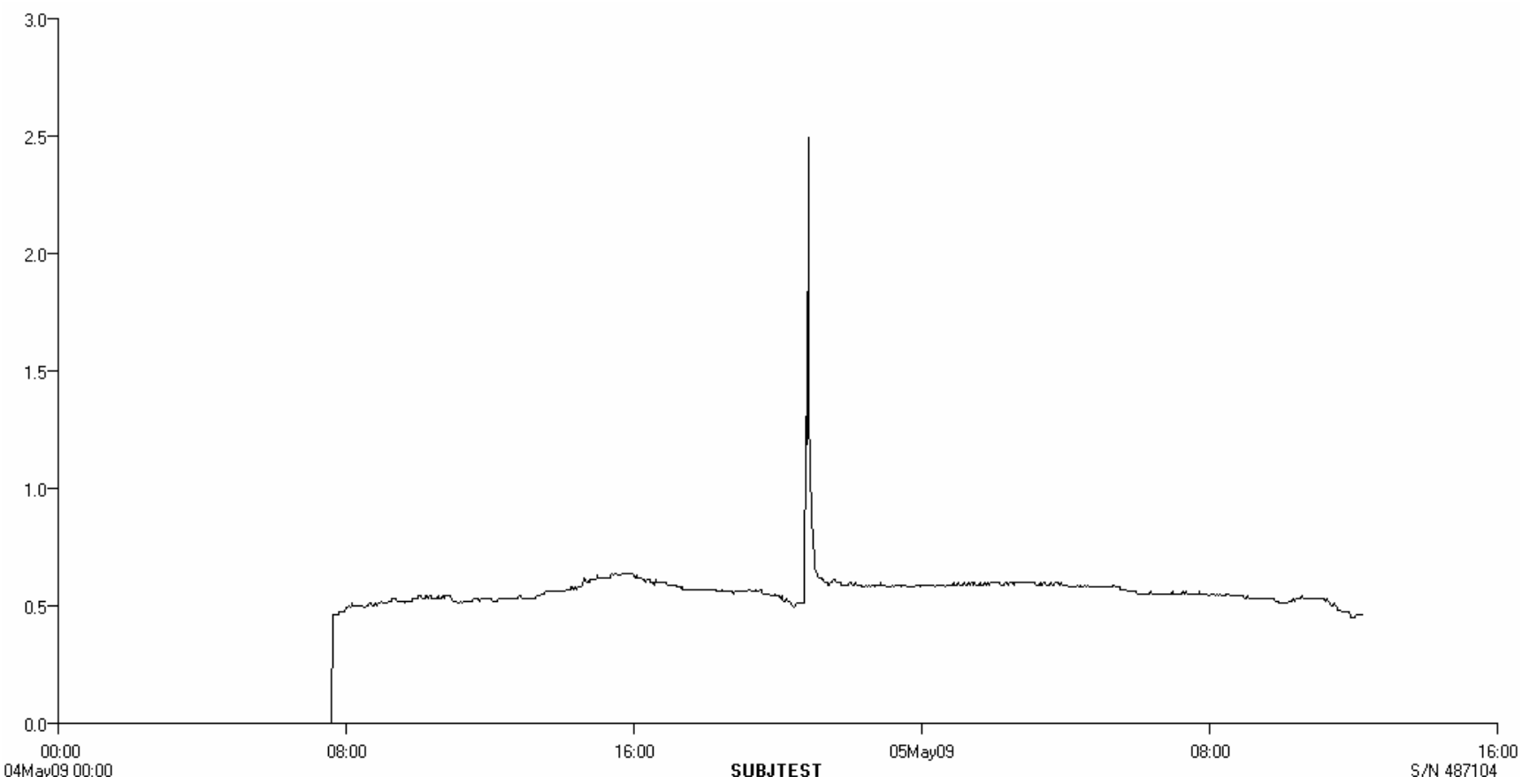
Appendix G

Environmental Parameter Measurements

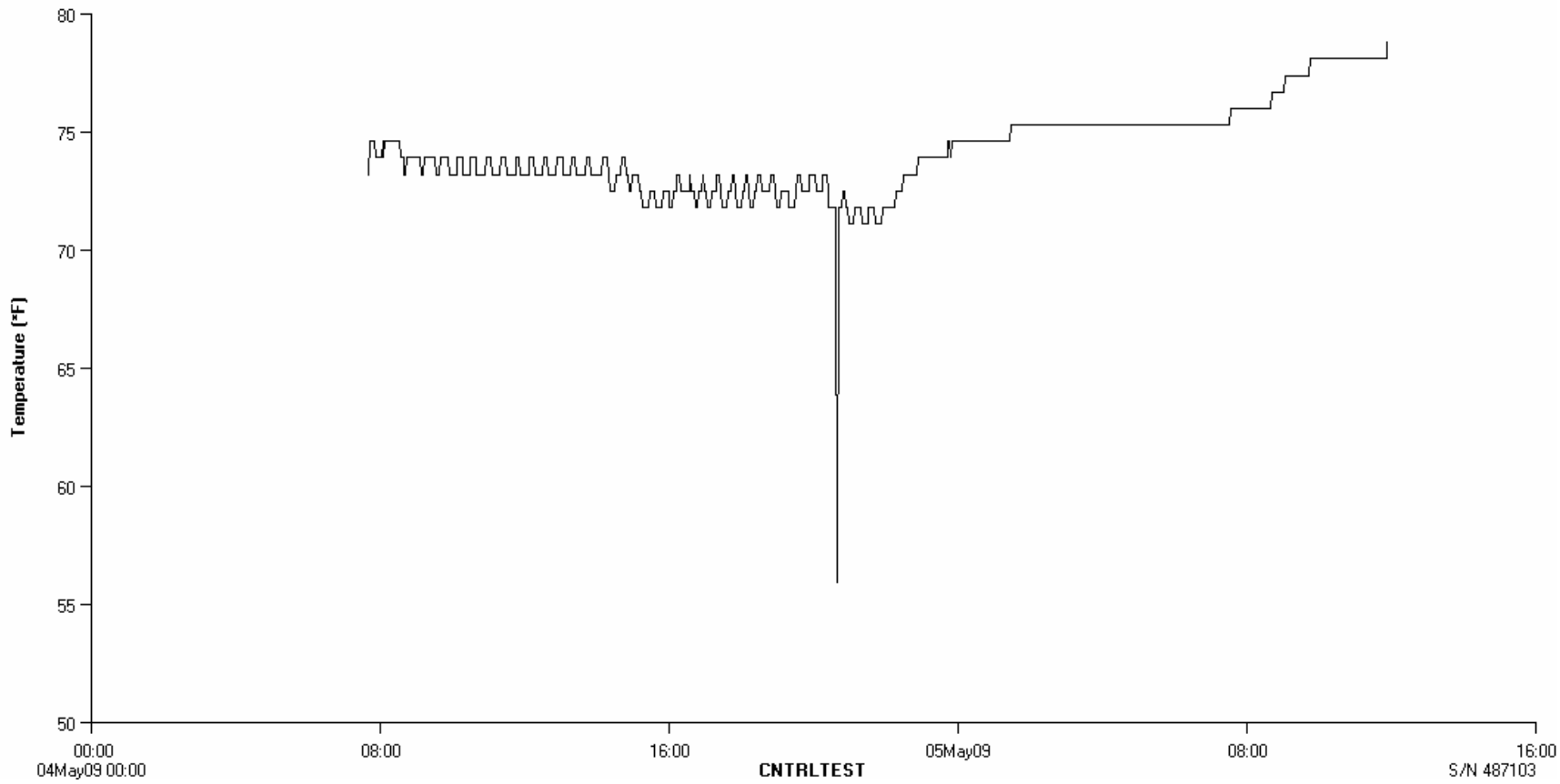

77
76
75
74
73
72
71
70
Temperature (°F)
00:00
04May09 00:00
08:00
16:00
05May09
08:00
16:00
SUBJTEST
S/N 487104


48
46
44
42
40
38
36
RH (%)
00:00
04May09 00:00
08:00
16:00
05May09
08:00
16:00
SUBJTEST
S/N 487104

CO2 (ppt)



(ppt)=parts per thousand; (0.1=100 ppm)


80
75
70
65
60
55
50
Temperature (°F)
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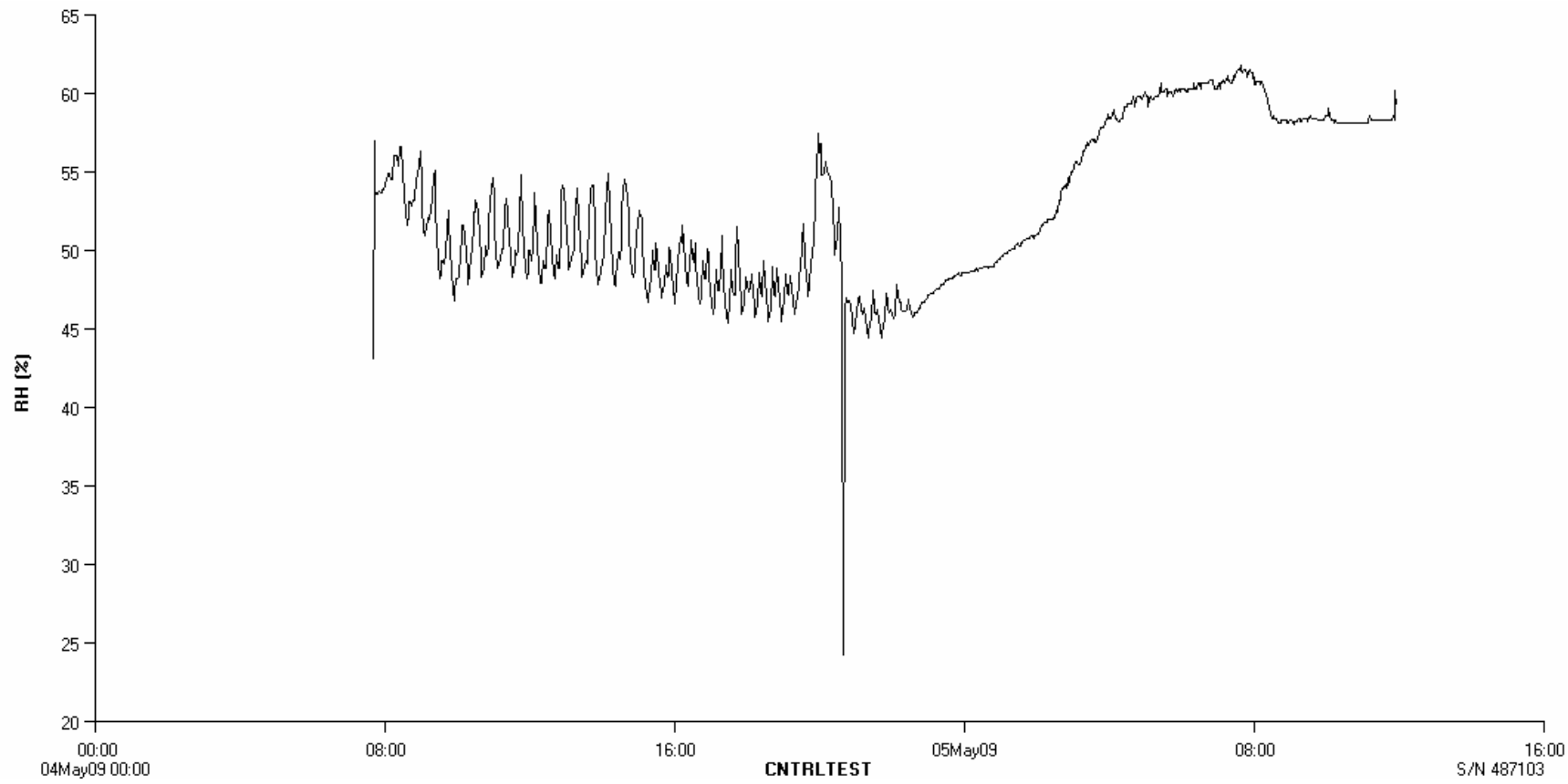
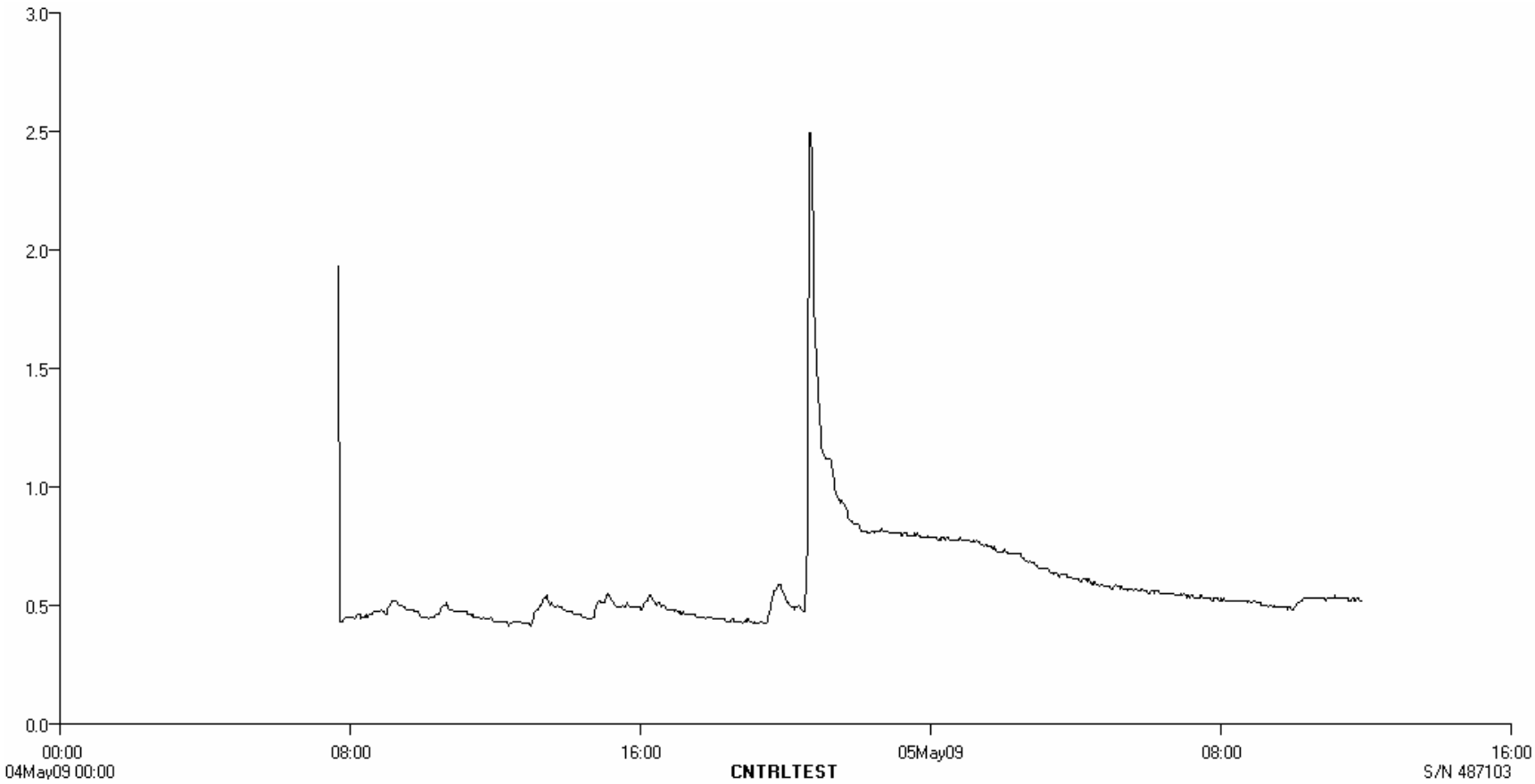
04May09 00:00
08:00
16:00
05May09
08:00
16:00
CNTRLTEST
S/N 487103


65
60
55
50
45
40
35
30
25
20
RH (%)
00:00
04May09 00:00
08:00
16:00
05May09
08:00
16:00
CNTRLTEST
S/N 487103

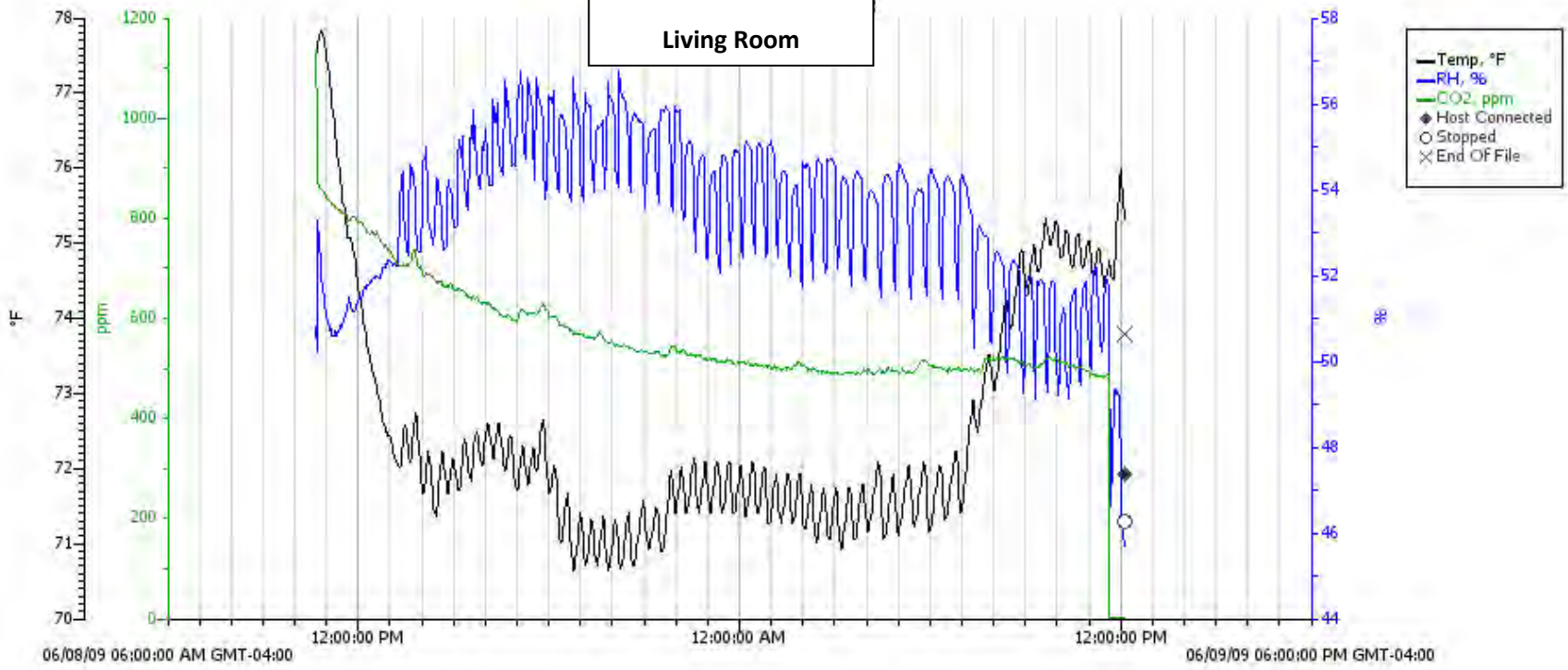
CO2 (ppt)



(ppt)=parts per thousand; (0.1=100 ppm)

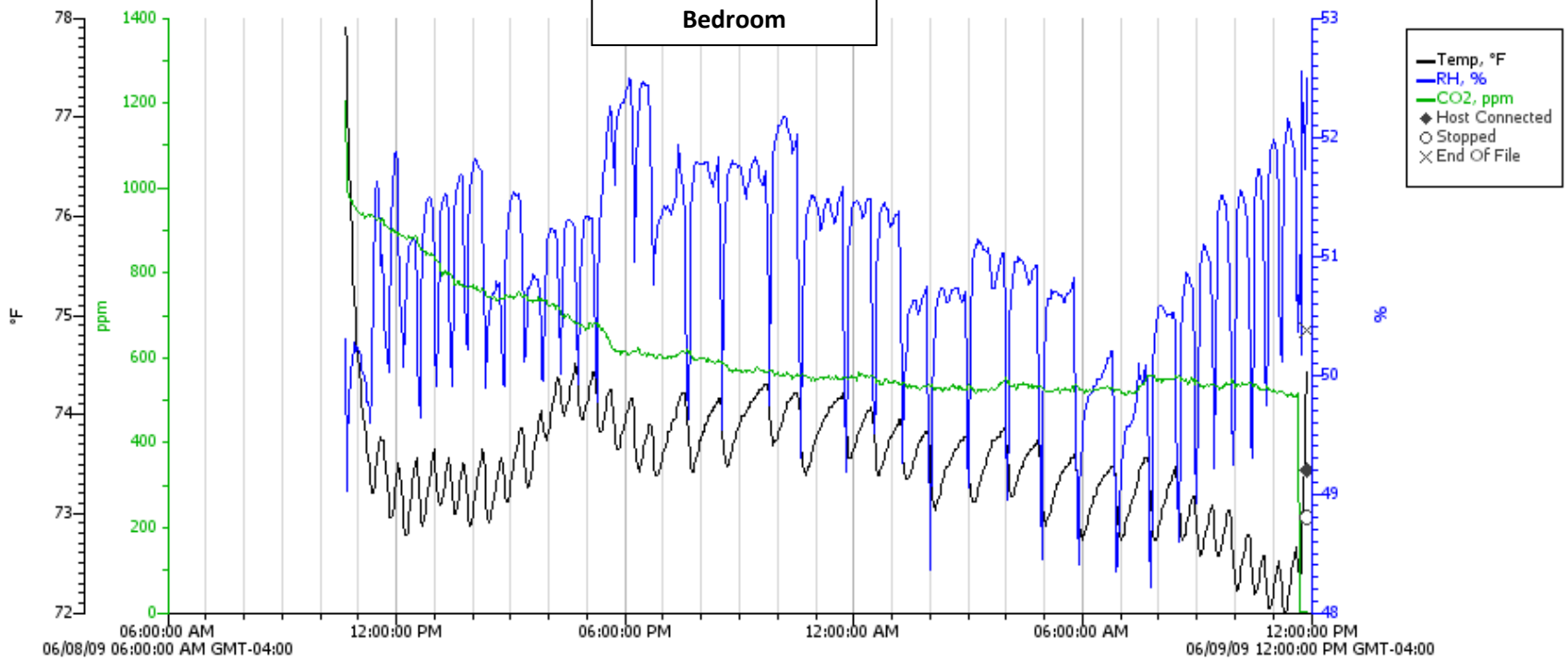
Unit 90 – Location 1

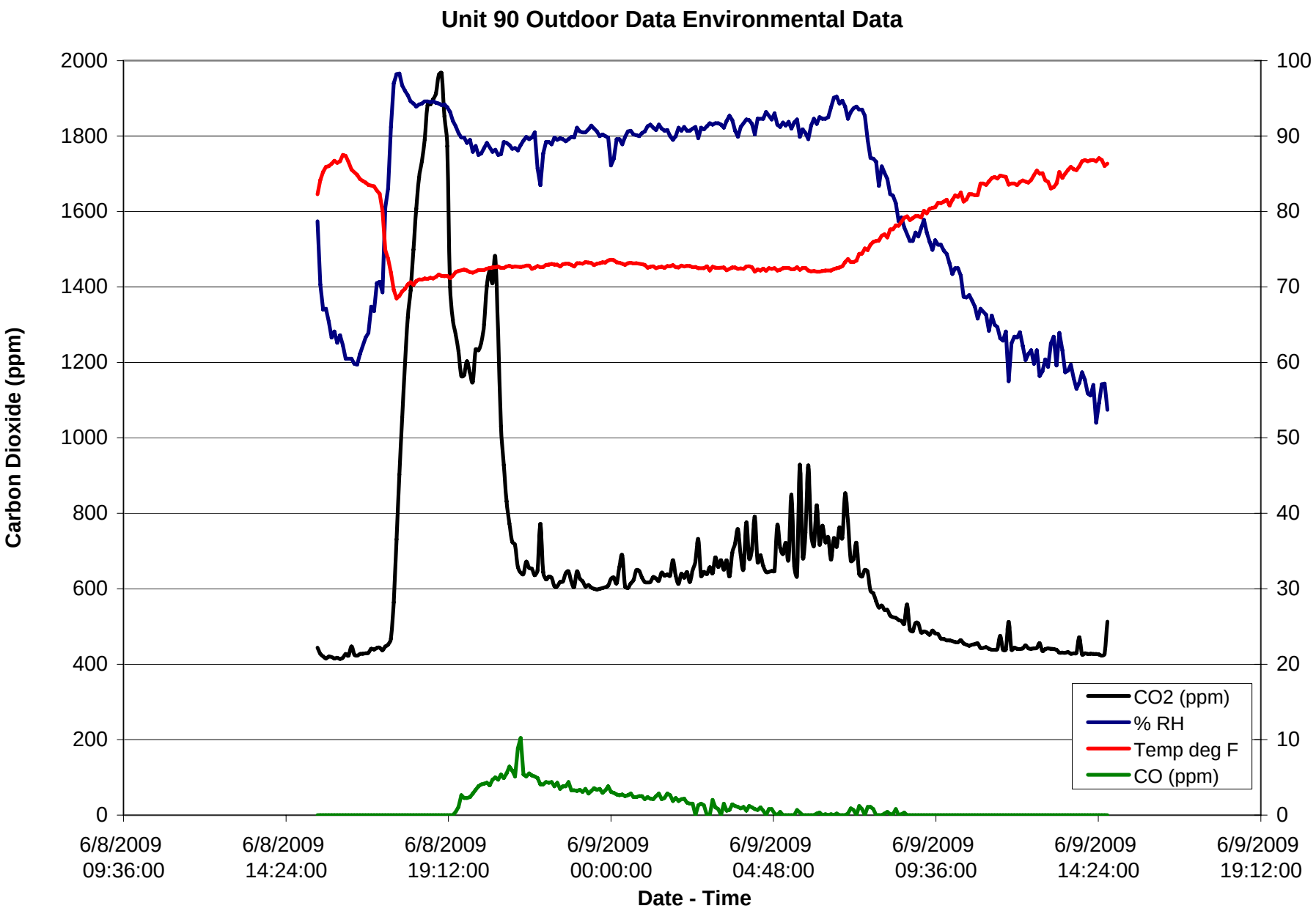
Living Room



Unit 90 – Location 2

Bedroom




Unit 90 Outdoor Data Environmental Data
Carbon Dioxide (ppm)
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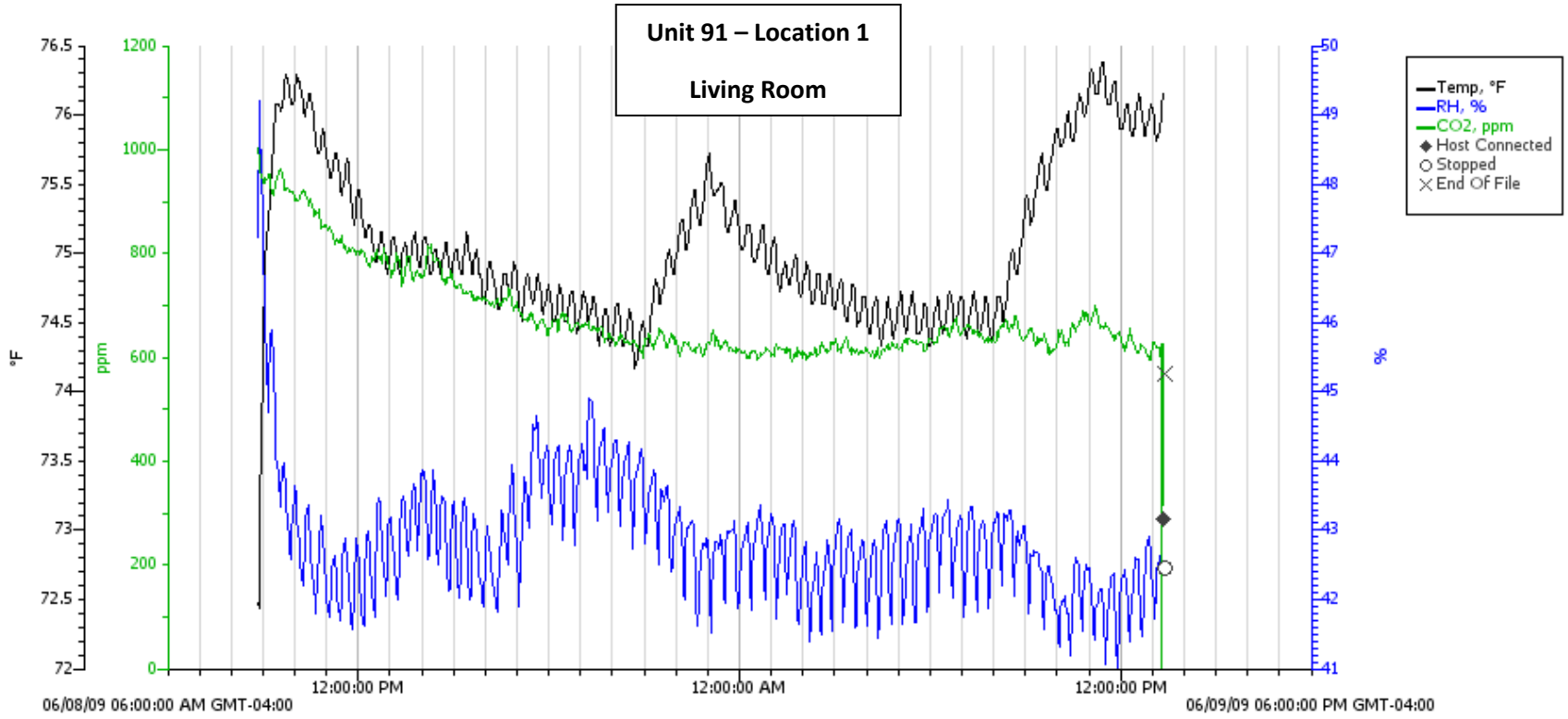
1800
1600
1400
1200
1000
800
600
400
200
0
100
90
80
70
60
50
40
30
20
10
0
6/8/2009 09:36:00
6/8/2009 14:24:00
6/8/2009 19:12:00
6/9/2009 00:00:00
6/9/2009 04:48:00
6/9/2009 09:36:00
6/9/2009 14:24:00
6/9/2009 19:12:00
Date - Time
CO2 (ppm)
% RH
Temp deg F
CO (ppm)


Unit 91 – Location 1
Living Room
Temp, °F
RH, %
CO2, ppm
Host Connected
Stopped
End Of File
°F
ppm
%
76.5
76
75.5
75
74.5
74
73.5
73
72.5
72
1200
1000
800
600
400
200
0
50
49
48
47
46
45
44
43
42
41
12:00:00 PM
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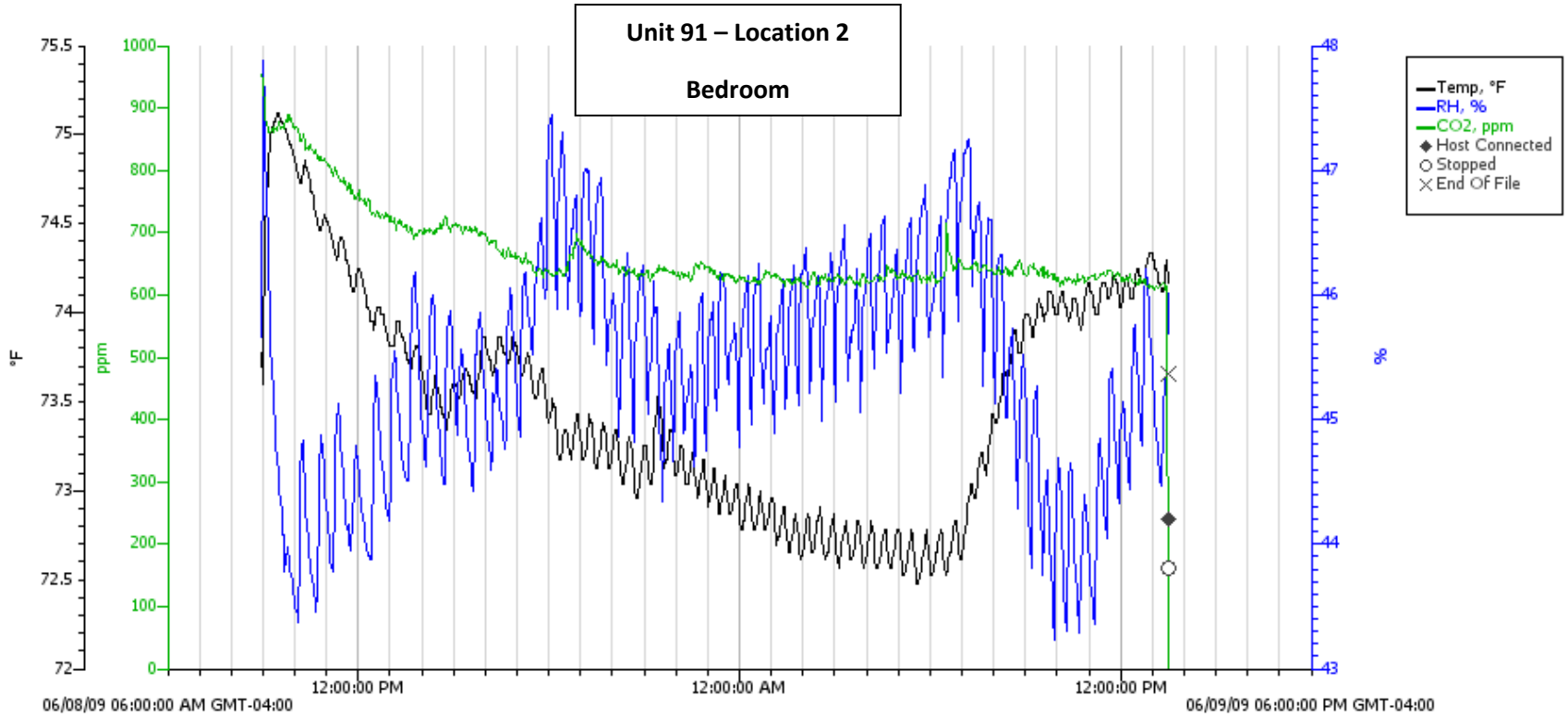
12:00:00 PM
06/08/09 06:00:00 AM GMT-04:00
06/09/09 06:00:00 PM GMT-04:00


Unit 91 – Location 2
Bedroom
Temp, °F
RH, %
CO2, ppm
Host Connected
Stopped
End Of File
°F
ppm
%
75.5
75
74.5
74
73.5
73
72.5
72
1000
900
800
700
600
500
400
300
200
100
0
48
47
46
45
44
43
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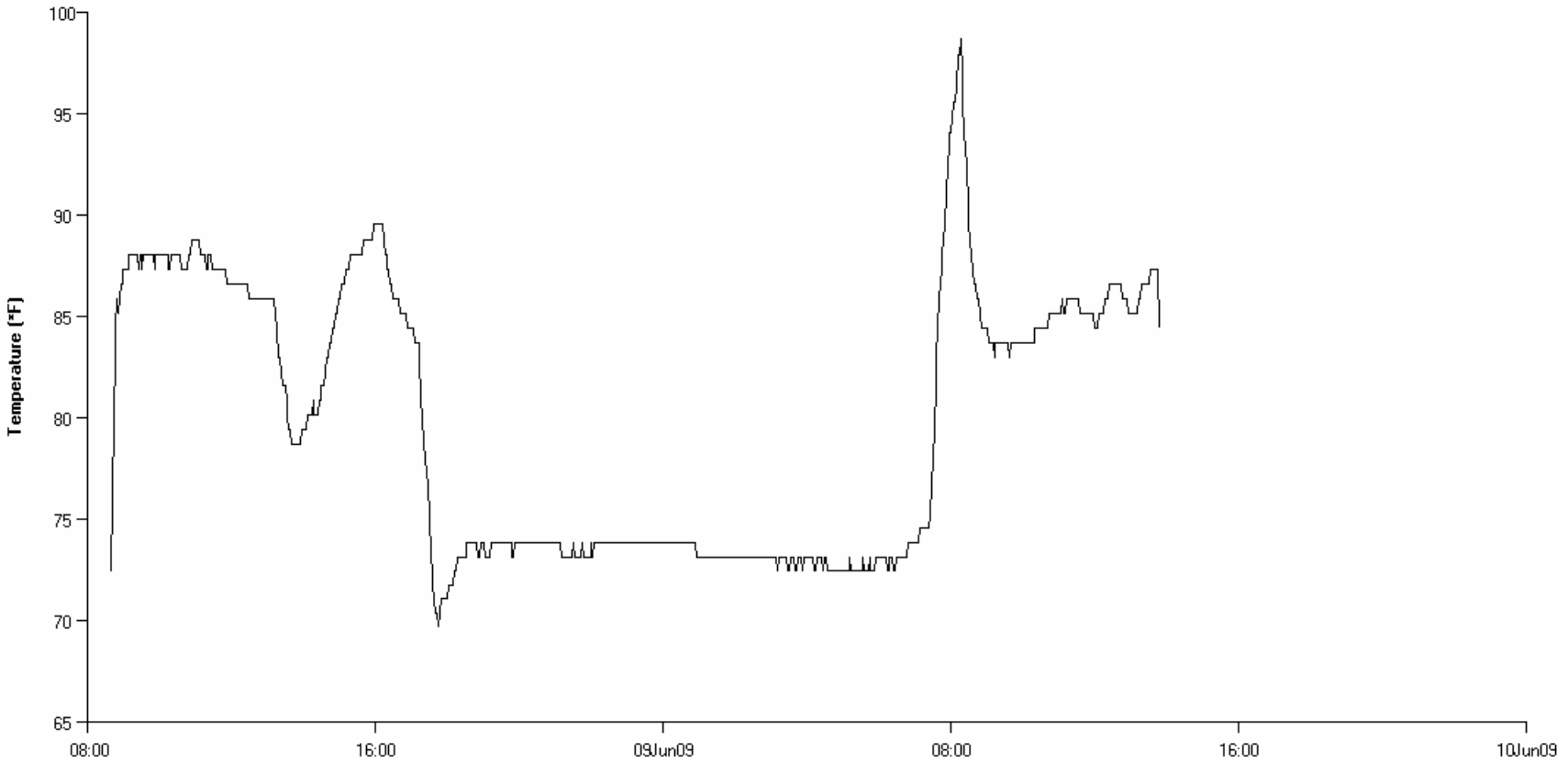
06/09/09 06:00:00 PM GMT-04:00

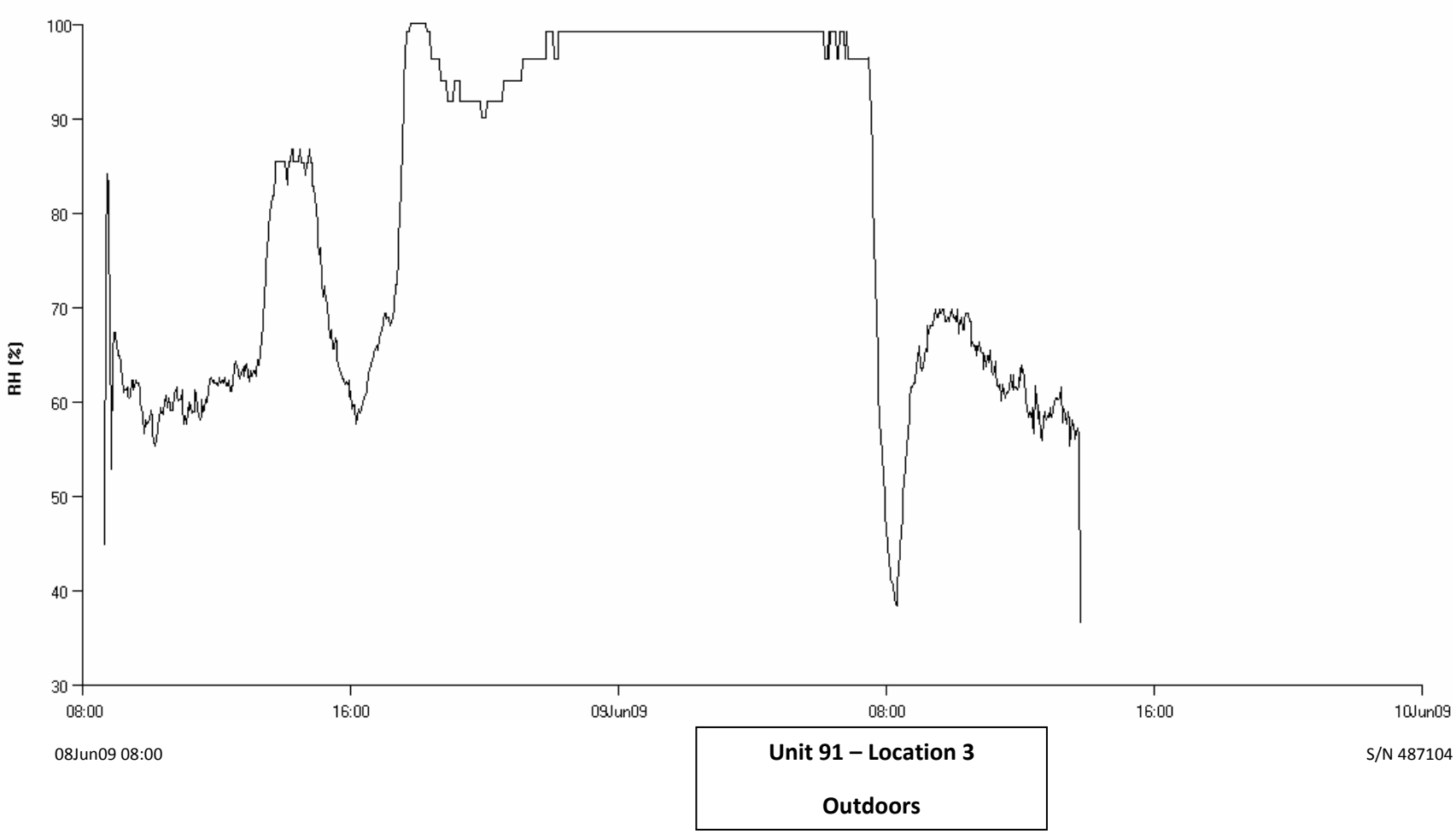


08Jun09 08:00

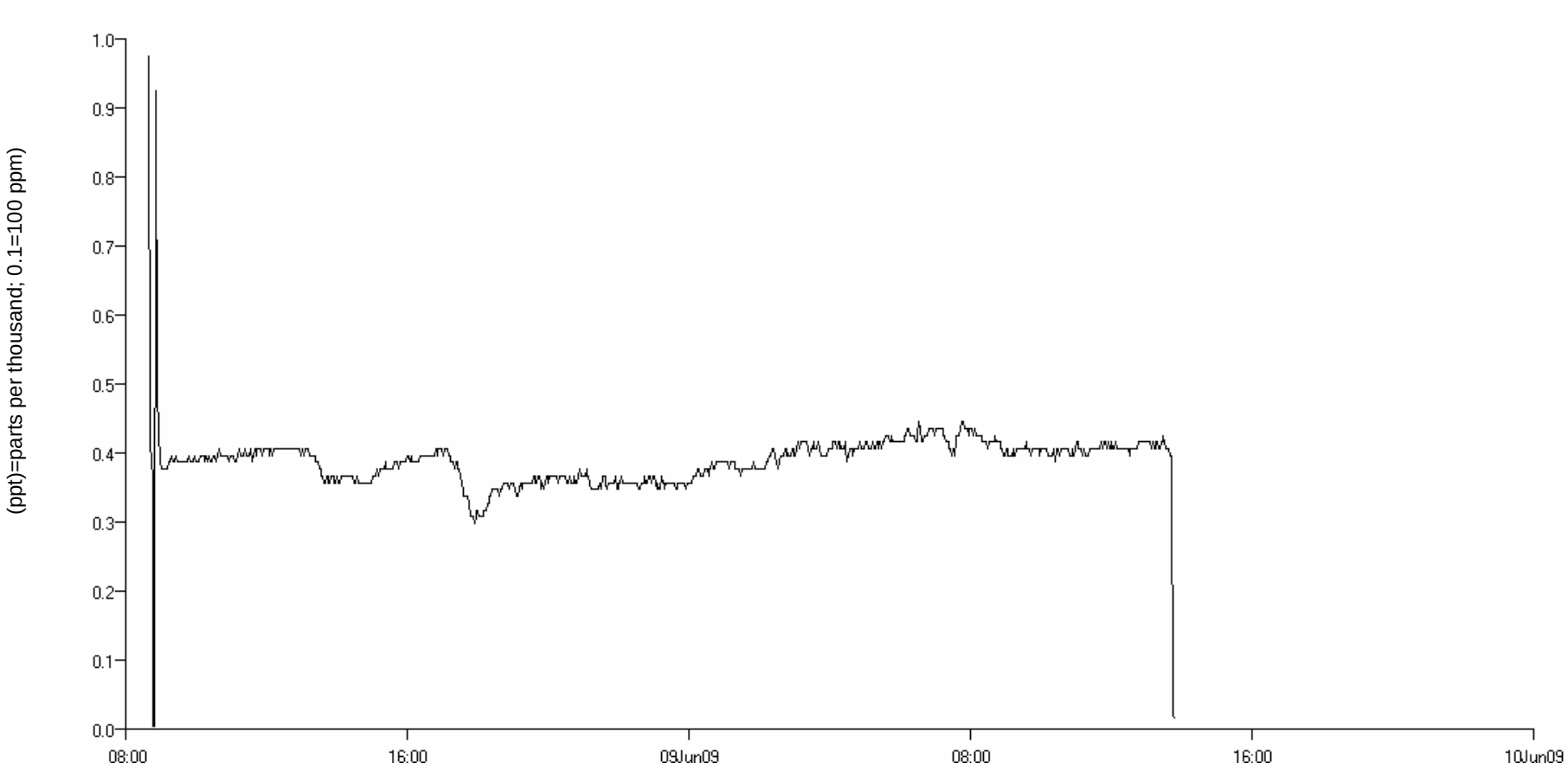
Unit 91 – Location 3

Outdoors

S/N 487104


RH (%)
100
90
80
70
60
50
40
30
08:00
16:00
09Jun09
08:00
16:00
10Jun09
08Jun09 08:00
Unit 91 – Location 3
Outdoors
S/N 487104

CO2 (ppt)


(ppt)=parts per thousand; 0.1=100 ppm)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
08:00
16:00
09Jun09
08:00
16:00
10Jun09
08Jun09 08:00
Unit 91 – Location 3
Outdoors
S/N 487104

Appendix C

AIR MONITORING AND SAMPLING IN FLORIDA

Observation and Activities

The team was mobilized to Florida on June 1, 2009. The air monitoring and sampling equipment were tested and calibrated. On June 4, 2009, EPA's Response Engineering Analytical Contract (REAC) personnel began sampling the first of the three Florida homes. In the two test homes, Units 100 and 102, where imported drywalls were used, the residents had corrosion and/or health complaints. Unit 101 was used as the background house, which had no corrosion or health complaints. At each of the three units, sampling was conducted over a 48-hour period, divided into four individual sampling events, two during the day and two during the night. For Units 100 and 101, the air conditioning was off for the Day 1 sampling events, and was turned on for the Day two events. For Unit 102, the air conditioner was not functional and so no air conditioning was used during any event. During each event, sampling was conducted for VOCs using charcoal tubes and SUMMA® canisters; PAHs; aliphatic and aromatic amines; formaldehyde, aldehydes and ketones; inorganic acids; and reduced sulfur gases in Tedlar® bags (Zefon International was used during all sampling event unless specified). Sampling was conducted at three locations, i.e., the living room, a bedroom, and outdoor location. In addition, SUMMA® canister grab samples and Tedlar® bag grab samples were collected from a fourth location within an interior wall.

Real-time air monitoring was performed for sulfur dioxide (SO_2), hydrogen sulfide (H_2S), and sulfuric acid (H_2SO_4) using Honeywell Analytics single-point monitors (SPMs); for VOCs, H_2S, and SO_2 using the RAE Systems AreaRAE monitors; for H_2S using a Jerome hydrogen sulfide analyzer (Jerome); and for temperature (T), relative humidity (RH%), carbon monoxide (CO), carbon dioxide (CO_2), and VOCs using a GrayWolf WolfSense® indoor air quality meter.

All the three units 100, 101, and 102 are newly constructed houses built (2006). The entire household chemical (sources of VOC's) used of for cleaning purpose, room fresheners, perfumes were packed in the containers and removed from the house before air monitoring and sampling started in the home. In addition to that all gasoline containing storage containers, automobiles, lawnmowers and other VOC emitted products were also removed for the garage before air sampling commenced to reduce the contribution of these chemical.

Real-time Air Monitoring Methodologies

Air monitoring for CO, CO_2, RH, and temperature was performed utilizing the GrayWolf IQ410 probe or the GrayWolf TG-502 probe (which also measures Total VOCs). Carbon dioxide is measured using non-dispersive infrared spectroscopy. CO is measured by an electrochemical sensor. Percent RH is measured by absorption or desorption of moisture by a thin polymeric film. For temperature, resistance over platinum element is measured, VOCs are detected using a 10.6 electron volt (eV) photo ionization detector (PID) configured to detect low-level parts-per-billion (ppb) concentrations. Data were recorded using the WolfSense PPC (pocket PC software) and WolfSense LAP (laptop software). Data were recorded in 15-minute averages.

The AreaRAEs were used to monitor H_2S and SO_2 using electrochemical sensors, and VOCs using a 10.6 eV PID. Using the AreaRAEs, the lowest detectable limit was 1 part-per-million (ppm) for H_2S, 0.1 ppm for SO_2 and 0.2 ppm for VOCs. The internal data logger of the AreaRAE was used to record data in 15-minute averages.

The SPMs utilize a Chemcassette® detection system to identify specific target gases at low-level concentrations. The chemcassette is a chemically impregnated tape designed to generate a colorimetric response to specific target compounds. The ChemKey® acts as a microprocessor chip to program the SPM for specific sample times and response levels to an individual target compound. A low-level H_2S ChemKey®, a low-level SO_2 ChemKey®, and a standard H_2SO_4 ChemKey® were used. Response times using these keys were 15 minutes for H_2S, 8 minutes for SO_2, and 2 minutes for H_2SO_4. The Lower Dectection Limit (LDL) for each compound was 1 ppb for H_2S, 5 ppb for SO_2, and 26 ppb for H_2SO_4. The full-scale response for each gas is 90 ppb for H_2S, 200 ppb for SO_2, and 750 ppb for H_2SO_4. As the measured concentration approaches the full-scale value, the SPM will shorten its sampling period. External data loggers were used to record the SPM data. The data loggers were set to record the H_2S reading every 5 minutes, SO_2 every minute, and H_2SO_4 every minute. The data was post-processed to generate 15-minute averages.

The Jerome 631-X hydrogen sulfide analyzer utilizes a patented gold film sensor. The sensor's selectivity to H_2S eliminates interferences from sulfur dioxide, carbon dioxide, carbon monoxide, and water vapors. When the sample button is pressed, an internal pump draws air into the instrument. Any H_2S in the sample is absorbed by the sensor which registers a proportional change in electrical resistance. The detection range is from 0.003 to 50 ppm and can take a measurement every three seconds. The Jerome was used to screen the homes before entry and to search for “hot spots” areas of higher H_2S concentration. There was no significant difference in hydrogen sulfide concentrations in indoor and outdoor air. However, when the sprinkler system came on at one house in Florida H_2S was detected in ambient air outside the house.

Monitoring Parameter	Instrument	Range or Detection Limit
VOCs H_2S SO_2	MultiRAE/AreaRAE MultiRAE/AreaRAE MultiRAE/AreaRAE	0.1 – 2000 ppm 1– 100 ppm 0.1– 20 ppm
H_2S	SPM	2 - 90 ppb (low range)
SO_2	SPM	5-200 ppb
H_2SO_4	SPM	26 – 750 ppb
CO	Grey Wolf	0 – 500 ppm
CO_2	Grey Wolf	0 – 10,000 ppm
Temperature	Grey Wolf	15 – 160ºF (-10 - 70ºC)
Humidity	Grey Wolf	0 – 100%

Air Sampling Methodologies

Ambient and indoor air sampling and analysis for VOCs was conducted following a modified USEPA Toxic Organic Compendium Method TO15: *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*. SUMMA® canisters were utilized to collect grab samples. Each sample was collected using a pre-cleaned, pre-evacuated canister, opening the valve and collecting 6 liters (L) of air within the breathing zone or within the wall-space of the building.

Ambient and indoor air sampling and analysis for VOCs were conducted following modified NIOSH Method 1500, *Hydrocarbons, BP 36-126 ÆC*, Method 1501, *Hydrocarbons, Aromatic* and Method 1003, *Hydrocarbons, Halogenated*. The sampling train consisted of a 600-milligram (mg) charcoal solid sorbent tube connected to a low/high flow personal sampling pump The sampling pump was calibrated to collect approximately 1.0 liter per minute (L/min) of air through the sorbent tube for eight hours for a total of 480 L.

Ambient and indoor air sampling and analysis for PAHs were conducted following a modified (GC/MS-Selected Ion Monitoring) NIOSH Method 5515, *Polynuclear Aromatic Hydrocarbons*. The sampling train consisted of a 600-mg washed XAD-2 solid sorbent tube with 2-micron (Φm), 37-millimeter (mm) Teflon (PTFE) filter connected to a low/high flow SKC sampling pump. The sampling pump was calibrated to collect approximately 1-1.3 L/min of air through the sorbent tube. Sampling was conducted for 10 hours with air volume targeted to be from 600 to 780 L.

Ambient and indoor air sampling for amines was conducted following NIOSH Method 2002, *Amines, Aromatic*, and NIOSH Method 2010, *Amines, Aliphatic*. A dual-manifold sorbent tube holder was used to collect an individual sorbent tube sample for each analysis. The sampling train consisted of two 225-mg silica gel tube connected to a personal sampling pump. The sampling manifold was calibrated to collect approximately 0.1 L/min of air through the tube. Sampling was conducted for eight hours with air volume targeted to be 48 L.

Ambient and indoor air sampling for aldehydes/ketones was conducted using EPA TO-11A, *Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Pressure Liquid Chromatography (HPLC)*. The sampling train consisted of a 450-mg silica gel tube treated with 2, 4-dinitrophenylhydrazine (DNPH) connected to a personal sampling pump. The SKC sampling pump was calibrated to collect approximately 0.5 L/min of air through the tube for eight hours for a total of 240 L. During two of the sampling events a second set of formaldehyde samples were collected, one at 1 L/min, and the other at 0.25 L/min.

Ambient air sampling for inorganic acids was conducted following NIOSH Method 7903. The sampling train consisted of a 600-mg specially cleaned silica gel tube connected to a sampling pump. The SKC sampling pump was calibrated to collect approximately 0.3 L/min of air through the tube for eight hours for a total of approximately 144 L.

Ambient and indoor air samples, as well as wall-cavity samples, were collected into 1-L Tedlar® bags (Zefon International) in accordance with Standard Operating Procedure (SOP) #2102, Tedlar® *Bag Sampling.* The Tedlar® bag was placed into the vacuum box and attached to Teflon® tubing that passes through a gas-tight fitting in the wall of the box, a sampling pump was attached to a separate quick-connect fitting and was used to create a pressure drop in the box. The pressure differential causes the sample to be drawn into the bag. The sample introduced into the Tedlar® bag never passes through the pump. The Tedlar® bag samples were analyzed for sulfur compounds following American Society for Testing and Materials (ASTM) Method D5504, *Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence*. When Tedlar® bag samples were to be shipped by air; a second bag was collected and assigned the same sample number to be analyzed if the first bag was destroyed in shipping. Tedlar® bags were filled approximately half full to allow for expansion during air shipment for Louisiana sampling events.

Real-Time Air Monitoring Events

At each unit, air monitoring was conducted throughout the four sampling events. For Units 100 and 101, monitoring was conducted at Locations 1, 2, and 3 for SO_2, H_2S, and H_2SO_4, using the SPMs and SO_2, H_2S and VOCs, using an AreaRAE. Temperature and relative humidity were monitored at Locations 1 and 2 using the WolfSense IAQ monitor and at Location 3 using an Extech temperature data logger (Extech). At Location 1, the WolfSense also measured CO, and CO_2, and at Location 2, the Wolfsense measured CO, CO_2, and VOCs. In Unit 102, SPMs and an AreaRAE were also used to monitor Location 4. Temperature and humidity at Location 4 were monitored using Extech.

Air Sampling Events

At Units 100, 101, and 102, four air sampling events were conducted. Three sampling locations were selected in each unit as follows: Location 1 in the living room, Location 2 in a bedroom, and Location 3, ambient. Location 4 was used to collect wall-cavity samples, the location varied by unit. At Units 100 and 101, the sampling events occurred as Day 1, Night 1, Day 2, and Night 2. At Unit 102, sampling was initiated with the Night 1 event, and followed by Day 1, Night 2, and Day 2 events.

Unit 100 Air Sampling (Test House). On June 4, 2009, REAC personnel initiated air sampling and monitoring at Unit 100 with the Day 1 event. Sorbent tube samples were collected in triplicate at Location 1, with an additional indoor sample at Location 2, and an ambient sample at Location 3, for a total of five samples per analysis. Sampling began at 0956 hours for eight hours for VOC tube samples, aliphatic amines, aromatic amines, formaldehyde, and inorganic acids. PAH sampling was conducted for 10 hours. Five samples, plus a field blank and lot blank were collected for each analysis, plus a trip blank for the VOC tube samples. Lot blanks were provided for the first event at each unit or if the media lot changed. In the middle of the Day 1 Event, REAC personnel collected Tedlar® bag samples for sulfur gases and grab SUMMA® canister samples for VOCs. The Tedlar® bag samples were collected in triplicate at Locations 1 and 4. In Unit 100 Location 4 a sample was collected from the cable box outlet in the wall

between the living room and the bedroom. A single Tedlar® bag sample was collected at Location 2 and Location 3. Tedlar® bag sampling was conducted between 1400 and 1430 hours. A grab SUMMA® sample was collected from Locations 1 through 4 between 1420 and 1432 hours.

The Unit 100 Night 1 Event was initiated on June 4, 2009 at 2030 hours. SUMMA® canister and Tedlar® bag samples were collected at the start of the sampling period. One SUMMA® was collected at each location, Tedlar® bag samples were collected in triplicate at Locations 1 and 4 and singly at Locations 2 and 3. Sorbent tube samples were collected in triplicate at Location 1 and singly from Locations 2 and 3. PAH sorbent tube samples were collected for 10 hours, all others for an 8-hour period. Including field and trip blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

The Unit 100 Day 2 Event was initiated on June 5, 2009 at 1008 hours. SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sorbent tube sampling. SUMMA® canister samples were collected from Locations 1 through 4 between 0857 and 0953 hours. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and one each at Locations 2 and 3. Tedlar® bag samples were collected between 0935 and 0952 hours. A bag from Location 1 failed, a replacement sample was collected at 1135 hours. Sorbent tube sampling commenced at 1008 hours. The air conditioner was turned on at approximately 1030 hours, and remained on for events Day 2 and Night 2. Including blanks, 9 Tedlar® bag samples, 5 SUMMA canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

The Unit 100 Night 2 Event was initiated on June 5, 2009 at 2120 hours. SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sorbent tube sampling. SUMMA® canister samples were collected from Locations 1 through 4 between 2021 and 2115 hours. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and one each at Locations 2 and 3. Tedlar® bag samples were collected between 2053 and 2115 hours. Sorbent tube sampling commenced at 2120 hours. Including blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

A total of 25 samples each were collected from Unit 100 for aliphatic amines, aromatic amines, formaldehyde, inorganic acids, and PAHs. Twenty SUMMA® samples for VOCs, 29 VOC-tube samples, and 36 Tedlar® bag samples for sulfur compounds were collected from Unit 100.

Unit 101 Air Sampling (Background House): On June 7, 2009, REAC personnel initiated air sampling and monitoring at Unit 101. Air sampling commenced with the Day 1 Event, followed by Night 1, Day 2, and Night 2. Sorbent tube sampling for the Day 1 Event was initiated at 0947 hours. Samples were collected for eight hours (10 hours for PAH). Sorbent tube samples were collected in triplicate at Location 1 and one each at Locations 2 and 3. . SUMMA® canister and Tedlar® bag samples were collected at the start of the sampling period. Unit 101 Location 4 was located inside an outlet box in the bedroom used as Location 2. One SUMMA® canister sample each was collected at Locations 1 through 4. Tedlar® bag samples were collected in triplicate at

Locations 1 and 4, and singly at Locations 2 and 3. SUMMA® canister samples were collected between 0945 and 1003 hours. Tedlar® bag samples were collected between 1009 and 1024 hours. Including lot, field and trip blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 8 VOC-tube samples, and 7 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

The Unit 101 Night 1 Event was initiated on June 7, 2009 at 2124 hours. . SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sorbent tube sampling. SUMMA® canister samples were collected from Locations 1 through 4 between 2006 and 2022 hours. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and one each at Locations 2 and 3. Tedlar® bag samples were collected between 2029 and 2250 hours. Sorbent tube sampling commenced at 2122 hours. A second set of formaldehyde samples was collected at each sampling location at a flow rate of 1 L/min. Including blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, 11 formaldehyde samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, and inorganic acids were collected.

The Unit 101 Day 2 Event was initiated on June 8, 2009 at 1016 hours. SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sampling period. SUMMA® canister samples were collected from Locations 1 through 4 between 0853 and 0910 hours. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and one each at Locations 2 and 3. Tedlar® bag samples were collected between 0920 and 0935 hours. A second set of formaldehyde samples was collected from each location at a flow rate of 0.25 L/min. Including blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, 11 formaldehyde samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, and inorganic acids were collected.

The final Unit 101 event, Night 2, was initiated on June 8, 2009 at 2137 hours. SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sampling period. SUMMA® canister samples were collected from Locations 1 through 4 between 2031 and 2042 hours. Tedlar® bag samples were collected in triplicate at Locations 1 and 4 and one each at Locations 2 and 3 between 2054 and 2116 hours. Including blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

A total of 25 samples each were collected from Unit 101 for aliphatic amines, aromatic amines, inorganic acids, and PAHs. Thirty-five formaldehyde samples, 20 SUMMA samples for VOCs, 29 VOC-tube samples, and 37 Tedlar® bag samples for sulfur compounds were collected from Unit 101.

Unit 102 Air Sampling (Test House): On June 9, 2009, REAC personnel initiated air sampling and monitoring at Unit 102. Air sampling commenced with the Night 1 Event, followed by Day 1, Night 2, and Day 2. Sorbent tube sampling for the Night 1 Event was initiated at 2006 hours. Samples were collected for eight hours (10 hours for PAH). Sorbent tube samples were collected in triplicate at Location 1 and singly at Locations 2 and 3. SUMMA canister and Tedlar® bag samples were collected prior to the start of the sampling period. Unit 102, Location 4 was located behind the paper enclosing a section of the drywall removed from the wall within the closet

under the stairs. One SUMMA® canister sample each was collected at Locations 1 through 4. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and singly at Locations 2 and 3. SUMMA® canister samples were collected between 1916 and 1934 hours. Tedlar® bag samples were collected between 1945 and 2006 hours. Including lot, field and trip blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 8 VOC-tube samples, and 7 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected. One Tedlar® bag sample from Location 1 failed during the transport to the laboratory and was not analyzed.

The Unit 102 Day 1 Event was initiated on June 10, 2009 at 0820 hours. SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sorbent tube sampling. SUMMA® canister samples were collected from Locations 1 through 4 between 0722 and 0739 hours Tedlar®bag samples were collected in triplicate at Locations 1 and 4, and one each at Locations 2 and 3. Tedlar® bag samples were collected between 0745 and 0802 hours. Sorbent tube sampling commenced at 0820 hours. Including blanks, 9 Tedlar® bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

The Unit 102 Night 2 Event was initiated on June 10, 2009 at 2015 hours. SUMMA® canister and Tedlar®bag samples were collected prior to the start of the sorbent tube sampling. SUMMA® canister samples were collected from Locations 1 through 4 between 1920 and 1935 hours. One-liter Tedlar®bag samples were collected in triplicate at Locations 1 and 4, and singly at Locations 2 and 3. A second set of 3-L Tedlar® bag (SKC) samples was collected at each of these locations upon completion of the 1-L samples. In addition, at Location 3, a 1-L Tedlar® bag sample was collected with lawn sprinklers off, a second 1-L Tedlar®bag sample was collected after the sprinklers operated for two minutes, and a third 1-L Tedlar® bag sample was collected after the sprinklers were shut off for five minutes. Tedlar® bag samples were collected between 1931 and 2039 hours. Sorbent tube sampling commenced at 2015 hours. Including blanks, 21 Tedlar® bag samples, five SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

The final Unit 102 Event, Day 2, was initiated on June 11, 2009 at 0810 hours. SUMMA canister and Tedlar® bag samples were collected prior to the start of the sampling period. SUMMA samples were collected from Locations 1 through 4 between 0722 and 0735 hours Tedlar®bag samples were collected in triplicate at Locations 1 and 4, and one each at Locations 2 and 3. Tedlar® bag samples were collected between 0737 and 0751 hours. Including blanks, 9 Tedlar®bag samples, 5 SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

A total of 25 samples, each for aliphatic amines, aromatic amines, formaldehyde, inorganic acids, and PAHs, were collected from Unit 102. Twenty SUMMA® canister samples for VOCs, 29 VOC-tube samples, and 48 Tedlar® bag samples for sulfur compounds were collected from Unit 102.

AIR MONITORING AND SAMPLING IN LOUISIANA

Observation and Activities

The team mobilized to Louisiana on June 22, 2009. On June 23, 2009, REAC personnel began sampling at the first of the three Louisiana homes. The two test homes, Units 200 and 202, were the houses where the residents had corrosion and/or health complaints and where imported drywall was used. Unit 201 was the reference house, which had no corrosion or health complaints and contained locally purchased drywall. At each of the three units, sampling was conducted over a 48-hour period, divided into four individual sampling events, two during the night and two during the day. For Units 200 and 201, the air conditioning was off for the first two events, and turned on for the second two events. For Unit 202, the air conditioner was not used during any event. During each event, sampling was conducted for VOCs in tubes and SUMMA® canisters; PAHs; formaldehyde, aldehydes and ketones; inorganic acids; and sulfur gases in Tedlar® bags. Aliphatic and aromatic amines were sampled during the first event (Night 1) at each unit, and then acetic and formic acid were sampled for during the following three events. Also, one 48-hour sampling event, coinciding with the two-night and two-day events, was conducted for pesticides and polychlorinated biphenyls (PCBs) using low-volume polyurethane foam (PUF). Pesticide and PCB samples were collected from the living room and ambient locations. Sampling was conducted at three locations, i.e., the living room, a bedroom, and an ambient location. In addition, grab SUMMA® canister samples and Tedlar® bag samples were collected from a fourth location within an interior wall.

At Unit 200, SUMMA canisters and Tedlar® bag samples were collected from an additional location in the garage. The Unit 200 locations were designated as follows: L1, living room; L2, bedroom; L3, ambient; L4, garage; and L5, interior wall space. At all other units sampled, L1 through L3, are the same as in Unit 200, and L4 is the interior wall space sample.

Air monitoring was performed for SO_2, H_2S, and H_2SO_4 using Honeywell analytics SPMs; for VOCs, H_2S, and SO_2 using the RAE Systems AreaRAE monitors; for H_2S using a Jerome hydrogen sulfide analyzer (Jerome); and for temperature (T), relative humidity (RH%), CO, CO_2, and VOCs using a GrayWolf WolfSense® indoor air quality meter. At Unit 202, total particulates were monitored for during the Night 2 and Day 2 events at locations L1 and L3, using a Thermo Scientific DataRAM 4.

Units 200 was a newly constructed house built (2006) and unit 201 and 202 were rebuilt after Katrina. The entire household chemical (sources of VOC's) used of for cleaning purpose, room fresheners, perfumes were packed in the containers and removed from the house before air monitoring and sampling started in the home. In addition to that all gasoline containing storage containers, automobiles, lawnmowers and other VOC emitted products were also removed for the garage before air sampling commenced to reduce the contribution of these chemical C.

Air Monitoring Methodologies

Real-time air monitoring performed in the Louisiana homes was exactly the same as in the Florida homes (described in Section 2.4 above on air monitoring methodologies). In addition, the

DataRAM 4 was utilized (dual-wavelength nephelometer) to measure airborne particulate concentrations based on Rayleigh scattering fluctuations. The DataRAM's measurement ranges are from 0.1 $\mu g/m^3$ to 400 mg/m^3. The instrument's data logger was used to log in15-minute averages.

Air Sampling Methodologies

Ambient and indoor air sampling and analysis was performed in the Louisiana homes exactly the same way as was done in the Florida homes (described in Section 2.4 above). In the Louisiana home, additional air sampling was performed for organic acid and pesticides/PCBs as described below:

Ambient and indoor air sampling for acetic and formic acids was conducted following Occupational Safety and Health Administration (OSHA) ID-186SG, *Acetic and Formic Acids in Workplace Atmospheres*. The sampling train consisted of a 600 mg charcoal solid sorbent tube connected to a low/high flow personal sampling pump (SKC). The sampling pump was calibrated to collect approximately 0.2 L/min of air through the sorbent tube for eight hours, for a total of 96 L.

Ambient and indoor air sampling for pesticides/PCBs was conducted following EPA TO-10A, *Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)*. The sampling train consisted of a 750-mg puf/tenax/puf sorbent tube connected to a medium flow sampling pump (Aircon). The sampling pump was calibrated to collect approximately 5 L/min of air through the sorbent tube for 48 hours, for a total of approximately 14,400 L.

Air Monitoring Events

At each unit, real-time air monitoring was conducted throughout the four sampling events. At all units, air monitoring was conducted at Locations 1, 2, and 3 for SO_2, H_2S, and H_2SO_4, using the SPMs, and for SO_2, H_2S, and VOCs, using an AreaRAE. Temperature and relative humidity were monitored at Locations 1 and 2 using the WolfSense IAQ monitor, and at Location 3 using an Extech temperature data logger (Extech). At Location 1, the WolfSense also measured CO, and CO_2, and at Location 2, the Wolfsense measured CO, CO_2, and VOCs. Total VOCs using the WolfSense were not logged in Unit 200. In Unit 200, SPMs were also used to monitor Location 4 (garage). Unit 200, Location 4 temperature and humidity were monitored using an Extech. In Unit 202, during the Night 2 and Day 2 events, particulates were monitored at Locations 1 and 3 using a DataRAM 4.

Air Sampling Events

In Units 200, 201, and 202, four air sampling events were conducted. Three sampling locations were selected at each unit: Location 1, living room; Location 2, bedroom; and Location 3, outdoor. In addition, the garage of Unit 200, identified as Location 4, was sampled. For Units 201 and 202, Location 4 identified the wall-cavity samples; in Unit 200, Location 5 identifies the

wall-cavity samples. At all three units, sampling commenced with the Night 1 sampling event followed by Day 1, Night 2, and Day 2 events Tedlar® bag samples were collected during the Night 1 and Night 2 events at Units 200 and 202, and during the Night 1 event at Unit 201. Two Tedlar® bag were provided per sample to minimize sample loss during shipment, only one bag was to be analyzed.

Unit 200 Air Sampling (Test House): On June 23, 2009, REAC personnel initiated air sampling and monitoring in Unit 200 with the Night 1 Event. Sorbent tube samples were collected in triplicate at Location 1, with an additional indoor sample at Location 2, and an ambient sample at Location 3, for a total of five samples per analysis. Sampling began at 1910 hours for eight hours for VOC tube samples, aliphatic amines, aromatic amines, formaldehyde, and inorganic acids. PAH sampling was conducted for 10 hours. Five samples, plus a field blank and lot blank were collected for each analysis, plus a trip blank for the VOC tube samples. Lot blanks were provided for the first event at each unit, or if the media lot changed. Pesticide/PCB sampling was conducted at Locations 1 and 3 for 48 hours, spanning the four sampling events. Two samples plus a lot blank and field blank were collected.

During the Unit 200 Night 1 Event, Tedlar® bag samples for sulfur gases were collected just prior to the start of the sorbent tube sampling. Grab SUMMA® canister samples for VOCs were collected at the start of the sorbent sampling event. The Tedlar® bag samples were collected in triplicate at Locations 1 and 5. Samples from Unit 200, Location 5, were collected from an area where a section of the drywall was removed from the living room wall. A single Tedlar® bag sample was collected at Location 2 (bedroom), Location 3 (ambient) and Location 4 (garage), and a field blank was collected. Tedlar® bag sampling was conducted between 1800 and 1900 hours. One grab SUMMA® canister sample was collected per location from Locations 1 through 5 between 1949 and 2003 hours; a trip blank was also collected. A total of 10 Tedlar® bag, 6 SUMMA® canister, 8 VOCs-tube samples, and 7 each for PAH, formaldehyde, aliphatic amines, aromatic amines, and inorganic acids samples were collected during the Unit 200 Night 1 Event.

The Unit 200 Day 1 Event was initiated on June 24, 2009 at 0826 hours. SUMMA® canister samples were collected at each of the five locations; a trip blank was also collected. SUMMA® canister samples were collected between 0730 and 0747 hours. Sorbent tube samples were collected in triplicate at Location 1 and singly from Locations 2 and 3. During this event and the two subsequent ones, samples were collected for acetic and formic acids. Samples were not collected for aliphatic amines or aromatic amines. The 48-hour collection of pesticides/PCBs continued. PAH sorbent tube samples were collected for 10 hours, all others for an eight-hour period. Including field and trip blanks, and a lot blank for acetic and formic acids, 6 SUMMA® canister samples, 7 VOC-tube samples, 7 acetic and formic acids samples, and 6 samples each for PAH, inorganic acids, and formaldehyde were collected.

The Unit 200 Night 2 Event was initiated on June 24, 2009 at 1916 hours. The air conditioner was turned on prior to the start of the sampling. Air conditioning was on for the Night 2 and Day 2 Events. SUMMA® canister and Tedlar® bag samples were collected just prior to the start of the sampling period. One SUMMA® canister was collected at each of the five locations, Tedlar® bag samples were collected in triplicate at Locations 1 and 5, and singly at Locations 2, 3 and 4. Sorbent tube samples were collected in triplicate at Location 1 and singly from Locations 2 and

3. The 48-hour collection of pesticides/PCBs continued. PAH sorbent tube samples were collected for 10 hours, all others for an eight-hour period. Including field and trip blanks, 10 Tedlar® bag samples, 6 SUMMA® canister samples, 7 VOC-tube samples, and 6 samples each for PAH, acetic and formic acids, inorganic acids, and formaldehyde were collected.

The Unit 200 Day 2 Event was initiated on June 25, 2009 at 0805 hours. Air conditioning was operating during this event. SUMMA® canister samples were collected prior to the start of the sorbent tube sampling. SUMMA samples were collected from Locations 1 through 5 between 0730 and 0750 hours. Including blanks, 4 pesticides/PCBs samples, 6 SUMMA® canister samples, 7 VOC-tube samples, 7 formaldehyde samples, and 6 samples each for PAH, acetic and formic acids, and inorganic acids were collected.

From Unit 200, a total of 25 inorganic acids samples were collected, 25 PAHs, 26 formaldehyde, 19 for acetic and formic acid, 7 for aliphatic amines, 7 for aromatic amines, 4 for pesticide and PCBs, 24 SUMMA® canister for VOCs, 29 VOC-tube, and 20 Tedlar® bag for sulfur compounds.

Unit 201 Air Sampling (Background House): On June 26, 2009, REAC personnel initiated air sampling and monitoring in Unit 201. Air sampling commenced with the Night 1 Event, followed by Day 1, Night 2, and Day 2. Sorbent tube sampling for the Night 1 Event was initiated at 1849 hours. Samples were collected for eight hours (10 hours for PAH). Sorbent tube samples were collected in triplicate at Location 1 and one each at Locations 2 and 3. Pesticides/PCBs sampling was conducted at Locations 1 and 3 for 48 hours, spanning the four sampling events. SUMMA® canister and Tedlar® bag samples were collected prior to the start of the sampling period. Unit 201, Location 4, was located inside an outlet box on the first floor bedroom. One SUMMA® canister sample was collected at each location, Locations 1 through 4. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and singly at Locations 2 and 3. SUMMA® canister samples were collected between 1808 and 1855 hours. Tedlar® bag samples were collected between 1800 and 1855 hours. Tedlar® bag samples and sorbent tube samples for aliphatic amines and aromatic amines were collected during the Unit 201 Night 1 Event only. Including lot, field and trip blanks, 9 Tedlar® bag samples, 5 SUMMA[7] samples, 8 VOC-tube samples, and 7 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected.

The Unit 201 Day 1 Event was initiated on June 27, 2009 at 0812 hours. SUMMA® canister samples were collected prior to the start of the sorbent tube sampling. SUMMA® canister samples were collected from Locations 1 through 4 between 0725 and 0745 hours. Sorbent tube sampling commenced at 0812 hours. During this event and the two subsequent ones, samples were collected for acetic and formic acids; samples were not collected for aliphatic amines or for aromatic amines. The 48-hour collection of pesticides/PCBs continued. Including blanks, 5 SUMMA® canister samples, 7 VOC-tube, 7 acetic and formic acids, and 6 each for PAH, formaldehyde and inorganic acids were collected.

The Unit 201 Night 2 Event was initiated on June 27, 2009 at 1840 hours. The air conditioner was turned on prior to the start of the sampling event. Air conditioning was on for the Night 2 and Day 2 Events. SUMMA canister samples were collected prior to the start of the sampling

period. SUMMA® canister samples were collected from Locations 1 through 4 between 1800 and 1840 hours. The 48-hour collection of pesticides/PCBs continued. Including blanks, 5 SUMMA® canister samples, 7 VOC-tube, and 6 each for PAH, formaldehyde, acetic and formic acids, and inorganic acids were collected.

The final Unit 201 event, Day 2, was initiated on June 28, 2009 at 0800 hours. SUMMA® canister samples were collected prior to the start of the sampling period. SUMMA samples were collected from Locations 1 through 4 between 0720 and 0740 hours. Including blanks, 4 pesticides/PCB samples, 5 SUMMA® canister, 7 VOC-tube, and 6 each for PAH, acetic and formic acids, formaldehyde, and inorganic acids were collected.

A total of 25 inorganic acids samples, 25 PAH, 25 formaldehyde, 19 acetic and formic acid, 7 aliphatic amines, 7 aromatic amines, 4 pesticide and PCBs, 20 SUMMA for VOCs, 29 VOC-tube, and 9 Tedlar® bag for sulfur compounds were collected from Unit 201. The 4 pesticide/PCBs samples were lost by the laboratory.

Unit 202 Air Sampling (Test House): On June 29, 2009, REAC personnel initiated air sampling and monitoring in Unit 202. Air sampling commenced with the Night 1 Event, followed by Day 1, Night 2 and Day 2 Events. The air conditioning was not turned on during any of the sampling events. Sorbent tube sampling for the Night 1 Event was initiated at 1922 hours. Samples were collected for eight hours (10 hours for PAH). Sorbent tube samples were collected in triplicate at Location 1 and one each at Locations 2 and 3. Pesticides/PCBs sampling was conducted at Locations 1 and 3 for 48 hours, spanning the four sampling events. SUMMA canister and Tedlar® bag samples were collected prior to the start of the sampling period. Unit 202, Location 4, was located inside the cable TV box in the right back bedroom. One SUMMA® canister was collected at each location, Locations 1 through 4. Tedlar® bag samples were collected in triplicate at Locations 1 and 4, and singly at Locations 2 and 3. SUMMA® canister samples were collected between 1915 and 1925 hours. Tedlar® bag samples were collected between 1825 and 1910 hours. Sorbent tube samples for aliphatic amines and aromatic amines were collected during the Unit 202 Night 1 Event only. Sampling for inorganic acids was conducted during the Night 1 and Day 1 Events. Including lot, field and trip blanks, 9 Tedlar® bag samples, 5 SUMMA® canister, 8 VOC-tube, and 7 samples each for PAH, aliphatic amines, aromatic amines, inorganic acids, and formaldehyde were collected during the Unit 202 Night 1 Event.

The Unit 202 Day 1 Event was initiated on June 10, 2009 at 0845 hours. SUMMA canister samples were collected prior to the start of the sorbent tube sampling. SUMMA samples were collected from Locations 1 through 4 between 0750 and 0825 hours. Sorbent tube sampling commenced at 0845 hours. During this event and the two subsequent events, samples were collected for acetic and formic acids; no samples were collected for aliphatic amines or for aromatic amines. The 48-hour collection of pesticides/PCBs continued. Including blanks, 5 SUMMA® canister samples, 7 VOC-tube, 7 acetic and formic acids, and 6 each for PAH, formaldehyde and inorganic acids were collected.

The Unit 202 Night 2 Event was initiated on June 30, 2009 at 1859 hours. SUMMA® canister and Tedlar® bag samples were collected just prior to the start of the sampling period. SUMMA®

canister samples were collected between 1903 and 1917 hours Tedlar® bag samples were collected between 1810 and 1925 hours. The 48-hour collection of pesticides/PCBs continued. PAH sorbent tube samples were collected for 10 hours, all others for an eight-hour period. Including field and trip blanks, 9 Tedlar[7] bag, 5 SUMMA® canisters, 7 VOC-tube, and 6 samples each for PAH, acetic and formic acids, and formaldehyde were collected.

The final Unit 202 Event, Day 2, was initiated on July 1, 2009 at 0802 hours. SUMMA canister samples were collected prior to the start of the sampling period. SUMMA canister samples were collected from Locations 1 through 4 between 0745 and 0815 hours. Including blanks, 4 pesticides/PCBs samples, 5 SUMMA canister, 7 VOC-tube, and 6 each for PAH, acetic and formic acids, and formaldehyde were collected.

A total of 13 inorganic acids samples, 25 PAH, 25 formaldehyde, 19 acetic and formic acid, 7 aliphatic amines, 7 aromatic amines, 4 pesticide and PCBs, 20 SUMMA® canister samples for VOCs, 29 VOC-tube, and 18 Tedlar® bag samples for sulfur compounds were collected from Unit 202.

Appendix D

DRYWALL INVESTIGATION
INDOOR AIR MONITORING PROTOCOLS DEVELOPMENT

Prepared by

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June 1, 2009

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Date 6/01/09

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Date 6/1/09

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A. PROJECT MANAGEMENT

Purpose. Indoor/outdoor air monitoring and air sampling will be performed for pre-selected parameters in three homes in Florida and Louisiana to determine how this initial protocol for indoor air monitoring should be modified in the future to evaluate the concentrations of designated compounds and environmental parameters potentially associated with off gases from Chinese drywall This protocol will derive the coefficient of variance of analytical procedures to inform power curve calculations for the appropriate number of samples to detect significant differences in future experimental designs. Data will be collected to identify current air concentrations in homes containing imported drywall. The analytical target compounds and suggested analytical methods will be provided to the Federal Consumer Products Safety Commission (CPSC), Florida Department of Health (FDOH), Louisiana Department of Health and Hospitals (LDHH), and the Agency for Toxic Substances and Disease Registry (ATSDR) to evaluate under their Quality Assurance Project Plans (QAPP) utilizing Data Quality Objectives (DQOs) related to human health exposures.

These sampling, monitoring and analysis protocols were prepared at the request of the United States Environmental Protection Agency (USEPA) senior management to support the drywall investigation at the request of the states of Florida and Louisiana. The protocols included in this QAPP follow the graded approach outlined in the Uniform Federal Policy (UFP) – QAPP guidance

The Technical Work Group, which includes the USEPA (OSWER, OPPTS, OEM, OSW and Regions 4, 6 and 9), ATSDR, CPSC and various States (Alabama, Florida, Louisiana, Mississippi, Texas, and Virginia), was formed to develop/assist with the preparation of protocols for additional upcoming testing of drywall and air monitoring in several homes in Florida and Louisiana at the direction of senior USEPA management to support the imported drywall investigation.

Raj Singhvi – Environmental Response Team (ERT), USEPA
Doug Neeley- USEPA Region IV
Chris Russell – USEPA Region IV
Jon Rauscher – USEPA Region VI
Susan Webster – USEPA Region VI
Bob Thompson – Office of Research and Development, USEPA
Laura Kolb – USEPA Headquarters (HQ)
Kimberly Cochran – USEPA HQ
Cathy Fehrenbacher – USEPA HQ
Toni Krasnic - USEPA HQ
Leroy Mickelson – National Decon Team (NDT), USEPA
Lynn Wilder – Centers for Disease Control and Prevention (CDC)
J Matheson - CPSC
Neil Sass – Alabama Department of Public Health
Jed Waldman – California Department of Public Health
David Krause – Florida Department of Health
William "Lee" Martin – Florida Department of Environmental Protection
Dianne Dugas – Louisiana Department of Health
Keith Casanova – Louisiana Department of Environmental Quality
Douglas Campbell – North Carolina State Department of Health
Kay Soper – Texas Department of State Health Services
Robert Smith – Virginia Department of Health
Laura White – Washington Department of Health

A3 DISTRIBUTION LIST

The following will receive copies of the approved QAPP for the drywall investigation being conducted by ERT in three houses in Florida and Louisiana:

1. Arnold E. Layne, Director, TIFSD, Project Manager
2. David P. Wright, Director, ERT Management Lead
3. Raj Singhvi, Chemist, ERT Technical Lead
4. Technical Team Members
5. Dennis Miller, Response Engineering and Analytical Contract (REAC) Program Manager

A4. PROJECT ORGANIZATION

The following individuals will participate in conducting indoor air monitoring for the drywall project:

USEPA/ERT
David P. Wright - Director, ERT – Project Lead
Raj Singhvi – Chemist, Technical Lead
Philip R. Campagna - Chemist, Technical Team Member
Alan M. Humphrey- Environmental Scientist, Technical Team Member
David W. Charters – Quality Assurance (QA) Manager, Office of Superfund Remediation and Technology Innovation (OSRTI)

REAC (ERT Contractor Staff - Lockheed Martin Inc.)
Dennis Miller, Program Manager
Amy DuBois – Senior Environmental Scientist - Task Lead
Philip Solinski – Air Response Group Leader
REAC Sampling Team Members
Deborah Killeen – Quality Assurance Officer (QAO)
Jay Patel – Inorganic Group Leader
Dennis Kalnicky - Inorganic Chemist
Naresh Bhatt - Inorganic Sample Preparation Chemist
Shiv Shani - Organic Sample Preparation Chemist
Vinod Kansal - Analytical Section Leader
Yihua Lin – Organic Group Leader/Method Development
Larry Martin – Sample Receiving/Analytical Subcontracting
Joseph Soroka – Data Validation
Donna Getty - Statistician

Analyses will be conducted by the following laboratories: ERT/REAC Laboratory, Edison, New Jersey, and other outside laboratories to be determined.

ERT Technical Lead Raj Singhvi is the primary point of contact for all technical issues. David Wright is the ERT Project Lead, reporting to Arnold E. Layne, USEPA Project Lead. Barnes Johnson is the alternate USEPA Project Lead.

A5. PROBLEM DEFINITION/BACKGROUND

Drywall from China has been imported to address the shortage of essential construction materials created following record-breaking 2004 and 2005 hurricane seasons and a national demand for new home construction. Based on preliminary estimates, as many as 60,000 to 100,000 houses may have been affected; it is uncertain how many homes have this specific drywall. Initial data analysis of drywall by laboratories shows elevated sulfur compounds, which are suspected to be the basis for concerns by newspaper account. It has been reported in the press that as the drywall is exposed to elevated levels of humidity, as well as elevated temperatures, the imported drywall may be off-gassing sulfur-based gases that have been associated with the odor and corrosion complaints.

ATSDR contacted OSRTI/ERT for analytical assistance with the Chinese-manufactured drywall used in Florida. ATSDR and ERT have a longstanding professional relationship and ATSDR is familiar with ERT's expertise in this type of investigation. On March 5, 2009, a teleconference was held between ERT, ATSDR and the FDOH. The FDOH provided background information

(http://www.doh.state.fl.us/Environment/community/indoor-air/drywall.html) including the work that had been performed by contractors from Lennar and Knauf (a German company that manufactures drywall in China) ATSDR requested that ERT conduct an independent analysis of the wallboard. At ATSDR's request, six wallboard samples were selected for analysis (two drywall painted samples manufactured in China that were extracted from two Florida houses, and four from the United States, not painted, which were purchased in local stores in Edison, New Jersey).

The drywall samples were analyzed for organic compounds, metals, sulfides, sulfates, elemental sulfur, formaldehyde, total organic carbon (TOC), water soluble chlorides, loss on ignition (LOI), pH and alkalinity, and were also subjected to an optical microscopic examination to determine presence of fly ash The drywall sample manufacturers and product names are as follows: US Gypsum/Hamilton (US); PROROC/Certainteed (US); National Gypsum/Gold Bond (US); GP/Tough Rock (US); Knauf/33928-20055 (China); and MIC/33966-12077 (China). The ERT/REAC analytical methods were modified to accommodate these samples as standard methods were not available in the area of sample digestion/preparation procedures

Notable differences between the Chinese-manufactured and US manufactured drywall samples were observed The ERT analysis showed the presence of sulfur ranging between 83 parts per million (ppm) to 119 ppm in the Chinese-manufactured drywall samples No sulfur was detected (10ppm) in the four US-manufactured drywall samples. The metals analysis shows the presence of strontium at concentrations of 2570 ppm and 2670 ppm in the Chinese-manufactured drywall samples, whereas strontium concentrations ranging from 244 ppm to 1130 ppm were found in the US-manufactured drywall samples. Total acid soluble sulfides were not detected in either the US- and Chinese-manufactured drywall samples. Further investigations on the drywall samples are needed to determine if the strontium is present as strontium sulfate or strontium sulfide using X-ray diffraction (XRD). Iron concentrations of 1390 ppm and 1630 ppm were found in the two Chinese-manufactured drywall samples Iron concentrations ranging from 841 ppm to 3210 ppm were found in the US-manufactured drywall samples The highest concentration of iron detected in National Gypsum/Gold Bond sample was twice as high as that found in the Chinese-manufactured drywall. No evidence of Fly Ash presence was noted in the Chinese-manufactured drywall samples based upon optical microscopic examination The chamber study for the off gases from the drywall is being conducted by the Federal Consumer Products Safety Commission

A6. PROJECT DESCRIPTION AND SCHEDULE

Air Monitoring in Homes in Florida and Louisiana: Based on the work performed to date, two homes that met the case definition and one home that did not meet the case definition constructed (http://www.doh.state.fl.us/Environment/community/indoor-air/drywall.html) with US-manufactured drywall in both Florida and Louisiana will be selected in consultation with FDOH, LDHH, and USEPA HQ. To reduce the hardship that will be imposed upon the various homeowners, one unoccupied residence in Florida will first be selected to refine the conditions (varying temperature and humidity) under which air monitoring and sampling will be conducted. Real-time continuous monitoring will be conducted for total VOCs, hydrogen sulfide (H_2S), sulfur dioxide (SO_2), sulfuric acid (H_2SO_4), CO, CO_2, temperature and relative humidity at two locations (living room and bedroom) in the homes.

Air Exchange Rates and Preparation for Indoor Air Monitoring and Sampling in Homes in Florida and Louisiana: Air exchange measurements will be performed in the houses by states or their designee using a tracer gas decay method. The protocols will be provided by FDOH. The results will be shared by FDOH and LDHH with USEPA. In addition to the ventilation rate assessment a preliminary walk-through will be performed to identify and eliminate indoor air contaminants including tobacco smoking, aromatic candles, aromatic dispensers and aerosols, stored paint cans, fuel storage cans, etc

Air Sampling in Homes in Florida and Louisiana: Air sampling will be performed for VOCs using SUMMA® canisters, VOCs in sorbent tubes, PAHs, inorganic acids, aldehydes/ketones and aliphatic and aromatic amines. Air samples for sulfur-containing compounds such as H_2S, carbonyl sulfide, carbon disulfide, dimethyl sulfide, dimethyl disulfide and mercaptans will be collected in 1-liter (L) or 3-L Tedlar bags with polypropylene fittings (Zefon® or SKC) during each sampling event at one selected location. One sampling location in the living room area and one sampling location in the master bedroom or other sleeping

area will be selected. Four sampling events will be conducted in unoccupied/occupied homes in each state of approximately 8-12 hours in duration. Two sampling events will occur during the day and the other two during night time hours. Ambient air samples will be collected in conjunction with the indoor air samples outside of each home; the number of ambient air samples may vary depending upon the locations of the homes selected. Grab samples will be taken in SUMMA® canisters once during each event for VOC analysis using USEPA Method TO-15. Three collocated air samples will be collected at one location in each house using appropriate sampling methods for each analysis during the four events. Continuous reading monitoring instruments will be recorded concurrently during the sampling events at both locations within the home.

Triplicate air samples from wall cavity will be collected once a day from each house into 1-L or 3-L Tedlar bags with polypropylene fittings and analyzed for hydrogen sulfide, carbonyl sulfide, carbon disulfide, dimethylsulfide and dimethyldisulfide by an outside laboratory using gas chromatography (GC) with Sulfur Chemiluminescence Detection (SCD).

Meteorological data will be collected by using a portable 3-meter tower located on site. Data collected from the station will include ambient temperature, relative humidity, wind speed, wind direction, and station pressure. The data will be downloaded, compiled and wind roses prepared for each sampling day.

Digital photographs will be taken to identify each of the monitoring and sampling locations. The layout of each location will be sketched by hand and transferred to graphing software at a later date.

The schedule of activities and reports is as follows:

- Draft Protocols — June 30, 2009
- Air Monitoring and Sampling (Florida) — June 1- June 20, 2009
- Air Monitoring and Sampling (Louisiana) — June 22- July 10, 2009
- Analytical Reports — TBD
- Final Report (Protocols for States) — TBD

A7. DATA QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT OF DATA

Data will be collected to evaluate the sample collection methods and analytical procedures to assess indoor air levels potentially associated with imported drywall. The results will be utilized to assess if the detection limits are adequate for the future use by public health agencies to evaluate potential exposures associated with the drywall.

The design of the study will collect information related to variance of the different methods in six houses (two houses in Florida and two houses in Louisiana with imported drywall and one house in Florida and one house in Louisiana without imported drywall). Coefficients of variance will be derived to assist future studies in developing power curves for purposes of experimental design.

The typical detection or reporting limits for this project based on manufacturer's claims or cited analytical methods are tabulated below:

Monitoring Parameter	Instrument	Range or Detection Limit
VOCs	MultiRAE/AreaRAE	0.1 – 200 ppm
H_2S	SPM	2 - 90 ppb (low range) 53 – 1500 ppb (MVIP range)
SO_2	SPM	0.2 – 6.0 ppm
H_2SO_4	SPM	26 – 750 ppb
Monitoring Parameter	Instrument	Range or Detection Limit

CO	Grey Wolf	0 – 500 ppm
CO2	Grey Wolf	0 – 10,000 ppm
Temperature	Grey Wolf	15 – 160°F (-10 - 70°C)
Humidity	Grey Wolf	0 – 100%

Sample Analysis	Reporting Limit	Matrix
VOCs (SUMMA canisters)	0.070 ppbv	Air
VOCs (Sorbent Tubes)	~2 to 10 µg/sample (volume dependent)	Air
PAHs (XAD Tubes)	~0.1 to 0.2 µg/sample (volume dependent)	Air
Inorganic Acids	~0.0005mg/sample (volume dependent)	Air
Aldehydes/Ketones	~0 1 ppbv (volume dependent)	Air
Sulfur Compounds	Compound specific	Air
Amines, Aliphatic	0 02 mg/sample (volume dependent)	Air
Amines, Aromatic	0.1 to 3 mg/sample (volume dependent)	Air

Data categories (DCs) corresponding to the data use objectives required for successful completion of this project are summarized in Table 1, *Field Sampling Summary* and Table 2, *QA/QC Analyses and Data Categories Summary* These tables identify analytical parameters desired; type, volume and number of containers needed; preservation requirements; number of samples to be collected; and associated number and type of QA/QC samples based on the data category Two of the three DCs based on the two Superfund Data Categories described in the 1993 Office of Solid Waste and Emergency Response (OSWER), Office of Emergency and Remedial Response (OERR) Directive, Screening Data (SD) and Definitive Data (DD), will be used for this project and are described below.

Screening data will be applicable to "real-time" air monitoring data for the preliminary identification and quantitation of contaminants. Screening data without definitive confirmation is not considered to be "data of known quality " The following requirements for "SD" are applicable to all air monitoring activities:

1. Sample documentation in the form of field logbooks and appropriate field data sheets. Chain of custody (COC) records is optional for field screening locations
2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook. The manufacturer's instructions or standard operating procedures (SOPs) should specify the procedure and frequency for calibration during use.
3. Detection limit(s) will be determined and documented, along with the data, where appropriate

Definitive data (DD) are used for all data collection activities that require a high level of accuracy using USEPA, National Institute of Occupational Safety and Health (NIOSH) and other industry-recognized methods. For the data to be definitive, either total measurement error or analytical error must be determined Definitive data will be used to assess health risk or environmental impact and/or delineation of contaminants by ATSDR/FDOH The following requirements for "DD" are applicable to all air samples:

1. Sample documentation in the form of field logbooks, the appropriate field data sheets, and COC forms will be provided
2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.
3. Detection limit(s) will be determined and documented, along with the data, where appropriate
4. Sample holding times will be documented; this includes documentation of sample collection and analysis dates
5. Initial and continuing instrument calibration data will be provided.
6. For air samples, one trip blank will be included with each shipment of samples
7. Performance Evaluation (PE) samples are optional
8. Analyte identification will be confirmed on 100 percent of the samples by analytical methods associated with definitive data
9. Quantitation results for all samples will be provided
10. Analytical or total measurement error must be determined on 100 percent of the samples.
    (a) Analytical error determination measures the precision of the analytical method. At a minimum, two replicate aliquots are taken from a thoroughly homogenized sample or two media blanks, prepared and analyzed in accordance with the method, calculated and compared to method-specific performance criteria.
    (b) Total measurement error is determined from independently collected samples from the same location and analyzed by analytical methods associated with definitive data. Quality control parameters such as the mean, variance, and coefficient of variation is calculated and compared to established measurement criteria.

The data use categories are based on the Data Quality Indicators (DQIs) used to determine the acceptability or usability of the data. Two DQIs used in the laboratory measurement process are precision and accuracy

- Precision is a measure of agreement between replicate measurements under similar conditions and may be expressed as Relative Percent Difference (RPD) A Percent Difference (%D) or RPD may be calculated between the results of a sample and a field duplicate sample after the measurement process is complete.

- Accuracy is a measure of the agreement between an observed value and an accepted reference value. This will be determined by analyzing a known reference material or a sample to which a specific amount of a known reference material has been added. Accuracy will be expressed as Percent Recovery (%R). Since accuracy takes into account the effects of variability (precision), accuracy is a combination of bias and precision.

A8 TRAINING AND CERTIFICATION

All field personnel involved with sampling activities will have the following documented training:

- Occupational Safety and Health Administration (OSHA) 40-hour and/or 8-hour refresher in Hazardous Waste Operations (29 CFR1910.120)
- Department of Transportation (DOT) hazardous materials shipping
- First Aid and Cardiopulmonary Resuscitation (CPR) training (at least one team member)
- Demonstration of Capability per parameter per analyst and per matrix.

A9. DOCUMENTS AND RECORDS

Documents and records that will be generated during this project include:

- Sampling and Monitoring Protocols
- Analytical Reports
- Sample Labels
- COC Forms
- Custody Seals
- Air Sampling Work Sheets
- Air Monitoring Work Sheets
- Instrument Printouts
- Data Review Records
- Data Reduction Records
- Data Assessment Forms
- Data Validation Records
- Final Report

All documentation will be recorded in accordance with SOP #2002, *Sample Documentation* This will include but is not limited to sample identification (ID), orifice and SUMMA® ID, identity of samplers, flow rate, vacuum before and after, and dates and times of sample collection Analytical Reports will be prepared using SOP #4020, *Analytical Report Preparation* The Final Report will provide a description of the project, field procedures, and laboratory procedures and will include final laboratory results with appropriate data validation report.

B. DATA GENERATION AND ACQUISITION

B1. SAMPLING/MONITORING PLAN DESIGN

Sufficient data should be obtained with the real-time instrument during the initial entry to screen the site for the appropriate contaminants. These gross measurements may be used on a preliminary basis to (1) determine levels of personal protection, (2) establish site work zones, and (3) map candidate areas for more thorough qualitative and quantitative studies involving air sampling.

Two homes with the imported drywall will be selected in both Florida and Louisiana. One home with US-manufactured drywall will be tested as a reference in conjunction with the selected homes in both Florida and Louisiana. One outdoor ambient air sample will be selected outside of each residence to evaluate the impact of ambient air on the indoor air. If the two homes are located within close proximity of each other, it may be feasible to select one ambient air location for both residences. Monitoring and sampling will not be conducted if there is a rainfall event. A rainfall event is defined as more than 5 minutes of precipitation Samples taken outdoors during a rainfall event will be either analyzed and the results will be flagged or discarded altogether.

Air sampling will be performed for VOCs using SUMMA® canisters, VOCs in sorbent tubes, PAHs, inorganic acids, aldehydes/ketones and aliphatic and aromatic amines. Sulfur-containing compounds such as H_2S, carbonyl sulfide, carbon disulfide, dimethyl sulfide, dimethyl disulfide and mercaptans samples will be collected during each sampling event at one selected location. One sampling location in the living room area and one sampling location in the master bedroom or other sleeping area will be selected Four sampling events will be conducted in unoccupied homes in each state of approximately 8-12 hour duration. Two sampling events will occur during the day and the other two during night time hours. Ambient air samples will be collected in conjunction with the indoor air samples outside of each home; the number of ambient air samples may vary depending upon the locations of the homes selected. Indoor air and ambient air samples will be collected at breathing height approximately 3 feet above the ground level. The summa grab sample will be taken once during every event for analysis for total VOCs (USEPA T0-15). Three air samples will be collected in each house using appropriate method for all events for each analysis and continuous reading instruments will be recorded throughout the sampling procedures at two locations.

Triplicate air samples from one selected wall cavity will be collected once a day from each house into appropriate bags, and analyzed for hydrogen sulfide, carbonyl sulfide, carbon disulfide, dimethylsulfide and dimethyldisulfide by the contract laboratory, using ASTM D5504-1

B2. SAMPLING/MONITORING METHODS

Toxic Gas Analyzer Monitoring. The toxic gas analyzer (MultiRAE/AreaRAE) is a compound-specific instrument designed and calibrated to identify and quantify a specific compound or class of compounds in either gaseous or vapor form. A data logger will be used to collect real-time data in 15-minute averages. Monitoring will be conducted in accordance with SOP #2139, *Operation of the MultiRAE Plus Multi Gas Monitor* and manufacturer's recommendations.

Single-Point Monitoring (SPM). The SPM or tapemeter employs a specially treated cloth tape reel called a "Chemcassette" and an electronic key called a "ChemKey" for the monitoring of H_2S, SO_2 and H_2SO_4. The ChemKey stores setup information and other functional information (i.e., flow rate, alarm levels and compound concentration times) needed for accurate detection of target gases. The Chemcassette is a medium onto which a known quantity of ambient air is concentrated. The use of the Chemcassette as a concentration media allows the instrument to monitor a variety of compounds in some cases down to the low parts per billion (ppb) ranges. When the tapemeter is monitoring, the tape from the Chemcassette is drawn into the "read head" where it is exposed to a predetermined amount of ambient air. If the target gas is present the tape responds with a color change in proportion to the concentration of the target gas present. The tapemeter reads this color change and through the ChemKey converts the observed color change into the concentration which is sent to the SPM light emitting diode (LED) display. The range and detection limits of the SPM are determined by the pre-programmed ChemKey specific for an analyte or a group of analytes. If monitoring is required, it will be performed in accordance with SOP #2115, *Single Point Monitor*.

Jerome H_2S Monitoring. Additional air monitoring may be conducted using the Jerome® 631-X. The Jerome® 631-X is a portable H_2S analyzer that displays low level concentrations with an analysis range of 0.003-50 ppm. When locked in survey mode, the 631-X automatically displays H_2S concentrations as quickly as every 3 seconds. The Jerome® 631-X utilizes a gold film sensor. The sensor's selectivity to H_2S eliminates interferences from sulfur dioxide, carbon dioxide, carbon monoxide, and water vapors. When the sample button is pressed, an internal pump draws air into the instrument. Any H_2S in the sample is absorbed by the sensor which registers a proportional change in electrical resistance. The H_2S concentration is displayed on the liquid crystal display (LCD), where it remains until the next sample is taken.

CO, CO_2, Relative Humidity (RH) and Temperature Monitoring. Air monitoring for CO, CO_2, RH and temperature will be performed utilizing the GreyWolf IQ410. CO_2 is measured using non dispersive infrared spectroscopy. CO is measured by an electrochemical sensor. Percent RH is measured by absorption or desorption of moisture by a thin polymeric film. For temperature, resistance over platinum element is measured. The Grey Wolf will be operated in accordance with SOP #1728, *Indoor Air Quality Monitoring Using the Wolfsense IAQ Probe*

Meteorological Monitoring. A Met One meteorological monitoring station will be set up to monitor wind speed, wind direction, barometric pressure, temperature, solar radiation, and rainfall. Operation of the Met One will be done in accordance with SOP #2129, *Met One Remote Meteorological Station*. Data will be processed using SOP #2138, *Installation and Use of the MicroMet Plus® Software*.

Digital photographs will be taken to identify the monitoring and sampling locations.

SUMMA® Canister Air Sampling. Grab air samples will be collected from each of the locations in SUMMA® canisters. Each SUMMA® canister for ambient air sampling will be opened for 30 seconds to collect 6 liters (L) of sample during the grab sampling period. SUMMA® canister sampling will be performed in accordance with SOP #1704, *SUMMA® Canister Sampling*

VOC Sampling. Ambient air sampling will be conducted following modified NIOSH Method 1500,

Hydrocarbons, BP 36-126 °C, Method 1501, *Hydrocarbons, Aromatic* and Method 1003, *Hydrocarbons, Halogenated.* The sampling train will consist of a 600-milligram (mg) charcoal solid sorbent tube connected to a low/high flow personal sampling pump (SKC). The sampling pump will be calibrated to collect approximately 1.0 liter per minute (L/min) of air through the sorbent tube for 8-12 hours for a total of 480-720 L.

PAH Sampling. Ambient air sampling for PAHs will be conducted following modified NIOSH Method 5515, *Polynuclear Aromatic Hydrocarbons.* The sampling train will consist of a 600-mg washed XAD-2 sorbent tube with 2-micron (um), 37-millimeter (mm) Teflon® (PTFE) filter connected to personal sampling pump (SKC). The sampling pumps will be calibrated to collect approximately 1.0 L/min of air through the sorbent tube and filter for approximately 8-12 hours for a total of 480 to 720 L.

Inorganic Acid Sampling. Ambient air sampling for inorganic acids will be conducted following NIOSH Method 7903, *Acids, Inorganic.* The sampling train consists of a 600-mg specially cleaned silica gel tube connected to a sampling pump. The SKC sampling pump will be calibrated to collect approximately 0.2 L/min of air through the tube for approximately 8-12 hours for a total of 96-144 L.

NOTE: For aldehydes/ketones, sulfur dioxide and aliphatic and aromatic amine sampling, high humidity may cause moisture buildup on the silica gel media; thereby reducing the total volume of air that may be drawn onto the sorbent tubes.

Aldehyde/Ketone Sampling. Ambient and indoor air sampling for aldehydes/ketones will be conducted using USEPA TO-11A, *Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Pressure Liquid Chromatography (HPLC).* The sampling train consists of a 150/300 mg silica gel tube treated with 2, 4-dinitrophenylhydrazine (DNPH) connected to a personal sampling pump. The SKC sampling pump will be calibrated to collect approximately 1.0 L/min of air through the tube for approximately 8-12 hours for a total of 480 to 720 L.

Aliphatic and Aromatic Amine Sampling. Ambient and indoor air sampling for amines will be conducted following a NIOSH Method 2002, *Amines, Aromatic,* and NIOSH Method 2010, *Amines, Aliphatic.* Two separate sampling trains consisting of a 225-mg silica gel tube connected to a personal sampling pump. The sampling pump will be calibrated to collect approximately 0.2 L/min of air through the filter. Sampling will be conducted for 8-12 hours with air volume targeted to be between 96 and 144 L.

Sulfur Compounds: Ambient and indoor air samples will be collected into 1-L Tedlar® bags in accordance with SOP # 2102, *Tedlar Bag Sampling.* The Tedlar® bag is placed into the vacuum box and the fitting is attached to the sampling port and Teflon® tubing. The pump is attached to the Tygon® tubing, which is connected to the fitting on the vacuum box. The pump will evacuate the air in the vacuum box, creating a pressure differential that causes the sample to be drawn into the bag. The sample introduced into the Tedlar® bag never passes through the pump.

B3 SAMPLE HANDLING AND CUSTODY

COC records will be used to document all SUMMA® samples collected. All COC records will be peer reviewed in the field prior to release. At least two custody seals will be placed across the canister shipping containers to ensure sample integrity. The samples collected by field personnel will be shipped to the designated laboratories in Section A4 for analysis in accordance with SOP #2004, *Sample Packaging and Shipment.* Scribe will be used for overall sample management and for the preparation of COC records and sample labels.

B4 ANALYTICAL METHODS

The following methods will be used to analyze samples in the laboratory for this project:

Parameter	Method	Matrix
VOCs (SUMMA Canisters)	SOP #1814, *GC/MS Analysis of Sorbent Tubes and Canisters* (Including up to 30 TICs)	Air
VOCs (Sorbent Tubes)	SOP #1816, *Indoor Air Analysis of Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (Including up to 30 TICs)	Air
PAHs (Sorbent Tubes)	SOP #1817, *Analysis of Polynuclear Aromatic Hydrocarbons (PAHs) in Air by GC/MS*(Including up to 30 TICs)	Air
Inorganic Acids	NIOSH Method 7903, *Acids, Inorganic*	Air
Aldehydes/Ketones	USEPA Method TO-11A, *Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Pressure Liquid Chromatography (HPLC)*	Air
Sulfur Compounds	ASTM Method D-5504-01, *Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence*	Air
Aliphatic Amines	NIOSH Method 2010, *Amines, Aliphatic*	Air
Aromatic Amines	NIOSH Method 2002, *Amines, Aromatic*	Air

TICs = Tentatively Identified Compounds

B5. QUALITY CONTROL

Appropriate QA/QC samples will be collected using the guidelines in SOP #2005, *Quality Assurance/Quality Control Samples*. Field QC samples are designed to assess the variability of the matrix or medium being sampled, and to detect contamination and sampling error in the field.

The following field QC samples will be collected during sampling:

- For VOCs, trip blanks will be collected at the frequency of one per shipment,
- For all sampling media, with the exception of SUMMA® canisters, a field blank will be collected for each day of sampling,
- For all sampling media, with the exception of SUMMA® canisters, a lot blank will be collected for each used during sampling, and
- For all sampling media, with the exception of SUMMA® canisters, two sorbent tubes will be submitted to be used as a blank spike/blank spike duplicate.

Laboratory QC samples are analyzed in the laboratory and are used to determine any matrix effects and to assess the performance of the laboratory. The following QC samples will be run for the VOC air analysis of SUMMA® canisters:

- System blanks for VOC gas chromatography/mass spectrometry (GC/MS) analyses,
- Replicate analysis at the frequency of 5 percent,
- Laboratory Control Sample (LCS) at the frequency of 5 percent.

The following QC samples will be run for VOCs (sorbent tubes), PAHs, aldehydes/ketones, aliphatic and aromatic amines, inorganic acids and sulfur compounds in air:

- One method blank must be prepared for each batch of 20 samples
- One BS/BSD must be prepared every 20 samples or per project.
- One lot blank must be extracted and analyzed for each tube and filter lot represented in the sampling event.

B6 INSTRUMENT/EQUIPMENT TESTING, INSPECTION AND MAINTENANCE

The ability to generate data of known quality is dependent on the maintenance of equipment and analytical instrumentation on a routine and as needed basis. Preventive maintenance actions are taken to prevent instruments from failing during use, to ensure proper instrument performance, and to increase the reliability of the measurement system Typically, maintenance is initiated when the QC requirements of the method are not met, previous experience with the instrument indicates maintenance should be performed, manufacturer's recommendations, a schedule determined by each group, or prior to and after monitoring and sampling. Each piece of equipment and analytical instrument is assigned a preventive maintenance logbook. All maintenance activities are recorded in this logbook and include the following information: date of service, person/vendor performing the service, type of maintenance performed and the reason, parts replaced, and any other pertinent information In addition, an ample supply of spare parts is maintained by each group to minimize downtime of the equipment/instruments. Repairs are defined as any unscheduled service or maintenance required on equipment or instrumentation that cannot be handled by field or laboratory personnel Any repairs made on equipment or instrumentation is also documented in the preventive maintenance log. The service or work orders should be taped in the logbook, and signed and dated across the tape

Contractor personnel will be responsible for conducting preventive maintenance on a routine and on an as-needed basis to prevent instruments/equipment from failing during use, ensure proper performance and increase the reliability of the system Each piece of equipment will be checked operationally prior to deployment

On a monthly basis, the following maintenance is conducted on the SPM, as required:

- Verify system response including electronics and optical system,
- Perform leak test,
- Perform gross alarm simulation,
- Replace acid scrubber and particulate filters,
- Conduct full alarm simulation,
- Conduct inventory of appropriate Chemcassette® checking expiration dates.

On a quarterly basis, the following maintenance is conducted on the Jerome® 631x, as required:

- Perform heat sensor regeneration,
- Zero the instrument,
- Check air intake,
- Change desiccant.
- Charge/change batteries,
- Change zero air or mercury exhaust filters,
- Change internal filters and/or intake filter disc,
- Perform functionality check.

The MultiRAE/AreaRAE are maintained on a monthly basis and checked prior to use in the field. All maintenance activities are documented within instrument/equipment-specific maintenance logbooks Maintenance includes but is not limited to cleaning the unit and the PID, verifying date and time set, and changing particulate/water trap filters.

The ERT/REAC Laboratory and the outside laboratories will be responsible for maintaining laboratory equipment

B7. INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

Operational calibration is generally performed as part of the analytical procedure and is dependent upon the type of instrumentation. Typically, certified standards with certificates of analysis are used to prepare calibration standards for analytical instruments Preparation of a standard curve is accomplished by using calibration standards containing the species to be analyzed into a specific solvent mixture to be introduced into the instrument. The concentrations of the working standards are chosen to cover the working range of the instrument The calibration curve is prepared by plotting instrument response versus the concentration of the standards. Concentrations of the samples analyzed are read directly from the calibration curve or determined by interpolation.

Instrument calibration typically consists of two types: initial calibration and continuing calibration. Initial calibration procedures establish the calibration range of the instrument and determine the instrument response over that range. The instrument response may be area counts, peak height, or absorbance, and is expressed as a percentage relative standard deviation (RSD) or a correlation coefficient Continuing calibration measures the instrument response to a single calibration standard, and the response is compared with the initial calibration Continuing calibration may be used as a single point within a 12-hour period, or every 10 samples, depending on the analyte to be measured

Calibration of flow rate for air sampling will be performed before sampling is initiated and after sampling is completed A secondary calibration device that has been calibrated against a primary calibrator will be used to determine the initial and final flow rates. The flow rate used to determine the volume of air sampled will be the average of the initial and final flow rates. All information will be recorded on the air sampling worksheets.

The Jerome® 631-X H_2S monitor is factory calibrated on an annual basis and a functionality check is conducted on a monthly basis

The SPM units do not require annual calibration The functionality test of the SPM optics is performed on a monthly basis to verify the system response, using an optical test card An additional leak test of the unit is performed to ensure that no leaks are present between the sampling point and the SPM A visual and audible alarm test is also performed to simulate four gas conditions: sub-alarm concentration, above alarm level 1, above alarm level 2, above full scale MultiRAE calibration is performed on a monthly basis or more frequently if necessary.

The PID used to measure total VOCs will be calibrated using isobutylene as the calibration gas on a monthly basis and prior to use. Each of the toxic gas sensors will be checked using a certified gas specific to the sensors installed in the instrument.

For VOCs in SUMMA® canisters and charcoal tubes and PAHs in XAD tubes, the GC/MS must meet the ion abundance tune criteria before initiating acquisition activities involving samples, blanks, or standards every 24 hours during sample analysis. Once the tune criteria have been met, the GC/MS system must be initially calibrated using a minimum of five concentrations to determine the linear response of the target analytes. After 24 hours of sample acquisition have passed, the GC/MS must be re-tuned and the initial calibration curve verified by the mid-level calibration standard

Any calibrations conducted by an outside laboratory for inorganic acids, aliphatic and aromatic amines and sulfur-containing compounds will be done in accordance with the cited analytical methods or the laboratory's SOPs and its Quality Assurance (QA) Manual.

B8 INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

Contractor personnel will have the responsibility for the inspection and acceptance of supplies and consumables. It is the responsibility of the USEPA/ERT to provide adequate facilities, equipment and supplies for the contractor to perform all field-related tasks for this Work Assignment The ERT contractor is responsible for the procurement, inspection, and acceptance of supplies and consumables for this Work

Assignment The outside laboratories will be responsible for the inspection and acceptance of supplies and consumables for the analytical activities subcontracted to them.

B9. NON-DIRECT MEASUREMENTS

This section is not applicable to this QAPP.

B10 DATA MANAGEMENT

Samples will be delivered under COC to the specified laboratories Samples will be identified by the field assigned number. The incoming samples will be checked against the COC for accuracy and assigned a unique laboratory number, which identifies the sample to the laboratory personnel. This number can later be cross-referenced to the field number. All laboratory procedures will be reviewed and the data verified for the appropriate QA objectives. Any problems identified will be brought to the attention of the USEPA/ERT Project Lead for resolution before release of the Final Report. Hard copies and electronic copies of all deliverables will be stored by the contractor in Central Files and on archive drive. All data deliverables for this Work Assignment will be posted to the ERT-Information Management System (IMS) website either as a Scribe electronic data deliverable (EDD) or in portable document format (.pdf). Any SOPs or APs referenced in this QAPP are available as uncontrolled copies Site logbooks and field sampling worksheets will also be archived once the project has been completed.

C. ASSESSMENT/OVERSIGHT

C1. ASSESSMENT AND RESPONSE ACTIONS

The ERT Technical Lead, ERT Project Lead, USEPA Project Lead, and the OSRTI QA Manager are responsible for QC assessments and corrective action for this project. The tasks associated with this QAPP are assessed through the use of peer reviews and management system reviews. Peer review enables the reviewers to identify and correct reporting errors before reports are submitted. Management system reviews establish compliance with prevailing management structure, policies and procedures, and ensures that the required data are obtained.

The USEPA/ERT Technical Lead will have the responsibility for verifying that the proper SOPs and sampling procedures are followed. If any technical issues or deficiencies are identified, the USEPA/ERT Project Lead will be notified and will pursue immediate resolution or corrective action. Any changes in scope of work will be documented and approved by the USEPA Project Lead.

C2 REPORTS TO MANAGEMENT

The ERT Technical Lead will issue weekly status report to the ERT Director, ATSDR, and the States Department of Health. The ERT Director will update the senior EPA management on a weekly basis.

D DATA VALIDATION AND USABILITY

D1 DATA REVIEW, VERIFICATION AND VALIDATION

All data produced under this QAPP will be evaluated to determine compliance with the stated collection methods, type, and number of samples collected, sample handling, and correct analytical procedures. Data review will be conducted in the laboratory prior to data release to evaluate the validity of the sample batch. Two data quality indicators, precision and accuracy, will be used to assess the batch Data verification is the steps taken to determine whether the quality requirements specified in the "B" elements of this QAPP have been met. For field activities, it is necessary to determine whether the samples were collected using the sampling design specified in element B1, whether the samples were collected according to a specific method or SOP as specified in element B2, whether the collected samples have been recorded and handled properly as in element B3, and whether the proper amount of QC samples were taken to satisfy the QC requirements specified in element B5. For analytical activities, each sample should be verified to ensure that the procedures

used to generate the data (as specified in element B4) were performed as specified The proper amount of QC checks (as specified in element B5) that were prepared and analyzed during the actual analysis provide an indication of the quality of the data. Instrument calibrations (as specified in element B7) are evaluated to determine whether the correct number of calibration standards were used and the range of the analysis, whether standards were analyzed in an appropriate sequence specific to the methods used, and were performed prior to the analysis of samples, blanks and QC samples in an appropriate time frame.

The Contractor's DV&RW Group is responsible for reviewing the data against a set of criteria to verify its validity prior to use The data validation process summarizes the data and QC deficiencies, and determines the impact on the overall data quality. Data validation qualifiers are assigned in the data assessment records, flagged on the results tables and are noted in the case narrative of the final analytical report.

D2. VERIFICATION AND VALIDATION METHODS

Data verification occurs at each level in the field and in the laboratory to ensure that appropriate outputs are being generated routinely. Records produced electronically or maintained as hard copies are subject to data verification During field activities, records associated with sample collection such as field data sheets, COC records, shipper's air bills, logbook documentation, or electronic devices to log samples or print sample labels are verified against approved SOPs or procedures. At sample receipt, COC records are verified along with refrigerator and freezer logs to ensure the integrity of the samples. During sample preparation, digestion/extraction logs, certificates of analysis for surrogates and spiking compounds, refrigerator and freezer logs, analytical requests and standard preparation logs are verified Manufacturer's certificates for calibration and/or internal standards, instrument run or injection logs, standard preparation logs, calculation worksheets, and QC sample results are verified during the analysis of the sample set. Review of data package or client deliverables are verified for compliance with peer review procedures

Data validation will be conducted on all of the analytical data packages to determine how seriously the sample data deviate from acceptance limits and the potential effect on the data. All anomalies will be documented in the case narrative of the final analytical report. Data will be validated in accordance with National Functional Guidelines or contractor data validation SOPs.

D3. RECONCILIATION WITH USER REQUIREMENTS

Responsibility lies with the USEPA.

REFERENCES

U.S Environmental Protection Agency. 2001. USEPA Requirements for *Quality Assurance Project Plans* (EPA QA/R-5), EPA/240/B-01/003, Office of Environmental Information.

U.S. Environmental Protection Agency 1990. *Quality Assurance/Quality Control Guidance for Removal Activities*, EPA/540/G-90/004, Office of Emergency and Remedial Response

Response, Engineering and Analytical Contract. 2003 *Quality Assurance Project Plan for the Response Engineering and Analytical Contract.*

United States Environmental Protection Agency. 2005 *Uniform Federal Policy for Quality Assurance Project Plans*, EPA-505-B-04-900A, Version 1

WWW EPAOSC ORG/SOP

TABLE 1. Field Sampling Summary - Air
Drywall Investigation
May 2009

Analytical Parameter	Action[1] Level	Sampling Media	Suggested Holding Times	Flow Rate	Volume Min - Max	Subtotal Number
VOCs	TBD	SUMMA® Canisters	30 days	Grab	6 L	36
VOCs	TBD	600 mg Carbon Tube	14 days at 4°C	1 L/min	480 to 720 L	60
PAHs	TBD	XAD-2 Tube/ PTFE Filter	14 days at 4°C	1 L/min	480 to 720 L	60
Inorganic Acids	TBD	600 mg Silica Gel Tube	21 days	0.3 L/min	96 to 144 L	60
Aldehydes/Ketones	TBD	150/300 mg silica gel tube w/DNPH	14 days at 4°C	1 L/min	480 to 720 L	60
Sulfur Compounds	TBD	1-L Tedlar Bag	24 hours	Grab	1.0 L	54
Amines, Aliphatic	TBD	225 mg silica gel tube	14 days at 4°C	0.2 L/min	96 to 144 L	60
Amines, Aromatic	TBD	225 mg silica gel tube	7 days at 4°C	0.2 L/min	96 to 144 L	60

NOTES: L = liters, TBD -= To be determined, VOCs = volatile organic compounds, SO_2 = sulfur dioxide, H_2SO_3 = Sulfurous acid, CO = Carbon monoxide, CO_2 = Carbon dioxide, L/min = liters per minute, mg = milligrams, PAH = Polycyclic aromatic hydrocarbons

1. The concentration level, specific or generic, which is needed in order to make an evaluation. This level will provide a basis for determining the analytical method to be used in consultation with ATSDR, and State of Florida and Louisiana.

TABLE 2. QA/QC Analyses and Data Categories Summary - Air
Drywall Investigation
May 2009

Analytical Parameter	Analytical Method	Estimated Limit of Detection[1]	Lot Blanks[2]	Ambient Air Samples[3]	Collocated Samples[4]	Trip Blanks[5]	Breakthrough[6]	PE Samples[7]	Data Category[8]
VOCs	REAC SOP #1814	0.070 ppbv	NA	1/home	NA	1/shipment	NA	NA	DD
VOCs	REAC SOP #1816	~2 to 10 µg/sample	1	1/home	NA	1/shipment	NA	NA	DD
PAHs	REAC SOP #1817	0.1 to 0.2 µg/sample	1	1/home	NA	NA	NA	NA	DD
Inorganic Acids	NIOSH 7903	~0.0005 mg/sample	1	1/home	NA	NA	NA	NA	DD
Aldehydes/Ketones	EPA Method TO-11A	~0.1 ppbv (volume dependent)	1	1/home	NA	NA	NA	NA	DD
Sulfur Compounds	ASTM D5504-01	Compound Specific	1	1/home	NA	NA	NA	NA	DD
Amines, Aliphatic	NIOSH Method 2010	0.02 mg/sample	1	1/home	NA	NA	NA	NA	DD
Amines, Aromatic	NIOSH Method 2002	0.1 to 3 mg/sample	1	1/home	NA	NA	NA	NA	DD

Analytical Parameter	Analytical Method	Estimated Limit of Detection[1]	Lot Blanks[2]	Ambient Air Samples[3]	Collocated Samples[4]	Trip Blanks[5]	Breakthrough[6]	PE Samples[7]	Data Category[8]
VOCs	MultiRAE	0.1 ppm	NA	NA	NA	NA	NA	NA	SD
H_2S	SPM	1 ppb	NA	NA	NA	NA	NA	NA	SD
SO_2	SPM	0.2 ppm	NA	NA	NA	NA	NA	NA	SD
SO_2	MultiRAE	0.1 ppm	NA	NA	NA	NA	NA	NA	SD
H_2SO_4	SPM	26 ppb	NA	NA	NA	NA	NA	NA	SD
CO	Grey Wolf	1 ppm	NA	NA	NA	NA	NA	NA	SD
CO_2	Grey Wolf	1 ppm	NA	NA	NA	NA	NA	NA	SD
Temperature	Grey Wolf	15°F	NA	NA	NA	NA	NA	NA	SD
Humidity	Grey Wolf	1%	NA	NA	NA	NA	NA	NA	SD

NOTES: DD = Definitive Data, VOCs = Volatile Organic Compounds, H_2S = Hydrogen sulfide, SO_2 = Sulfur Dioxide, H_2SO_4 = Sulfuric Acid, CS_2 = Carbon disulfide, COS = Carbonyl sulfide, DMS = Dimethylsulfide, DMDS = Dimethyldisulfide, CO = Carbon monoxide, CO_2 = Carbon Dioxide

1. To be determined by the person arranging the analysis. Should be equal to or less than the action level.

2. Required for all data categories at a minimum rate of 10 percent of the total sample or one per sampling event per lot.
3. Mandatory for Definitive Data at a minimum rate of 5 percent of the total sample or one per sampling event. Certain methods may require a greater frequency.
4. Required for all data categories at a minimum rate of 5 percent of the total sample or one per sampling event.
5. Optional for SD/DC and mandatory for DD at a minimum rate of 5 percent of the total sample or one per sampling event.
6. Recommended for SD/DC and DD. Rate is method dependent. Requirement for use is based on deviations from accepted protocol and atmospheric conditions.
7. Performance evaluation samples are optional for SD/DC and DD at one per parameter per matrix. For SD, enter "NA."
8. Enter QA objective desired: SD, SD/DC, DD

Appendix E

EPA/ERT Quality Assurance/Quality Control Considerations

Air samples were collected in Florida and Louisiana as stipulated in quality assurance project plan (QAPP) of June 1, 2009 (Appendix H). Appropriate duplicate samples and trip blank samples were collected and were sent to the predetermined laboratories for analysis with the chain of custody records. These samples were analyzed by Lakeland Laboratories (ASTM D5504-8), Columbia Analytical Services, a National Environmental Laboratory Accreditation Committee (NELAC) certified laboratory (TO-11, TO-10A NIOSH 7903, 2010, 2002), the ERT/REAC laboratory, a NELAC certified laboratory (NIOSH 1500, 1501, 1003, 5515 and TO-15) and Veritas laboratory (OSHA ID 186). Data were verified and validated in accordance with the National Functional Guidelines for Data Review modified for NIOSH, ASTM and OSHA methodologies by the ERT/REAC contractor. The objective was to establish guidance to evaluate, and validate data generated by the ERT/REAC Laboratory as well as data generated by outside laboratories.

A library search was performed for non-target compounds present in the method blank and the samples for the purpose of tentative identification. Substances with responses less than 10% of the nearest internal standard are typically not searched; however, for this project, the 30 largest peaks were searched since this was an investigative process to determine the type of compounds that may be causing the homeowners' concerns. Tentatively identified compounds are the best estimate based on what these compounds may be and should be treated as such. Professional judgment is used in deciding whether a library search result for a TIC represents a reasonable identification. When there is a lack of isomer specificity, the TIC result is reported as a nonspecific isomer result. If a sample TIC match is poor, but other samples have a TIC with a valid library match, similar relative retention times, and the same ions, identification is inferred from the other sample TIC results. In order to confirm the compounds and concentrations, one must obtain the standards to verify.

Florida Sampling Events

For the aldehydes analysis by EPA Method TO-11A, breakthrough of the 2,4-dinitrophenylhydrazine (DNPH)-coated cartridges occurred during the sampling events. Results with breakthrough greater than 10% and less than 50% should be regarded as estimated concentrations. Results with greater than 50% breakthrough should be used with caution since this is indicative of aldehyde loss (concentrations are biased low). The highest breakthrough was observed for acetaldehyde ranging from approximately 30 to 180% and butyraldehyde ranging from 11 to 120%. It should be noted that there was only one sample that had evidence of breakthrough at 11% for formaldehyde, just above the acceptance criterion.

Carbon disulfide was also observed in blank samples at an estimated concentration up to 2.44 ppbv during the Night 1 sampling event.

Louisiana Sampling Events

For the aldehydes analysis by EPA Method TO-11A, a greater percentage of breakthrough of the 2,4-dinitrophenylhydrazine (DNPH)-coated cartridges was observed for the sampling events. As stated above, results with breakthrough greater than 10% and less than 50%, should be regarded as estimated concentrations. Results with greater than 50% breakthrough should be used with caution since this is indicative of aldehyde loss (concentrations are biased low). Breakthrough was greater for the Louisiana samples as compared to the Florida samples .The highest breakthrough was observed in unit 202 for acetaldehyde ranging from approximately 35% to 2000%, butyraldehyde ranging from 23 to 980%, and formaldehyde in ten out 0f 25 samples collected in unit 202, ranging from 14% to 30% .

The capacity of DNPH-coated silica gel samplers varies with relative humidity (RH). For consistency, the same sampling volumes and the same sampling trains were used. A loss of carbonyl-DNPH derivative due to the reaction of atmospheric ozone on DNPH-coated silica gel cartridges may have also occurred while sampling ambient air. For future sampling events, it is recommended that an ozone scrubber in-line with the cartridge in addition to lowering the sample volume be adjusted to reduce breakthrough.

Appendix F

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.*

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
1,1-Biphenyl		1.1		7873	5.0, pleasant	fungicide
1-Butanol		12.7	9.7	151,329	91.0[fd]	solvent, paint remover
1-Butanol, 2-ethyl		0.4	0.11			
2-Butanone (MEK) (J)		6.8	2.6	5,000 RfC	736[fd], pungent	nail polish remover
2-Butoxy ethanol	5.55	BDL	3.05	25,000ppb TLV[3]	339ppb[h]	
4-tert-Butylcyclohexyl acetate (Vertenex)		5.9	4.54			
(+)-Camphene		1.7	1.2			
2-Cyclohexen-1-one, 4-(1-methylethyl)-		2.1	0.82			
1-Decanol	18.8	BDL	7.97		9,179[2d], sweet	alcohol
1,2-Dichloroethane (irritant)	12.5ppb, 50.6	8.33ppb	16.03ppb	2,430 ug/m^3 MRL	24,295[d], sweet	Adhesives, cleaners
2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate		7.8	3.7			
2,6-Di-tert-butyl-4-methyl…		0.5		6,000		cosmetics
1-Dodecene		4.0	2.71			
1,2-Ethanediol (Ethylene glycol)		3.0	1.0			
2-Ethyl hexanol	18.7		12.1	106,339	1276[1]	
2(3H)-Furanone, dihydro		1.7	1.36	6,015	pleasant	ink jet printing
1-Heptanol		6.2	4.21		3ppb[t]	
2-Heptanone	7.13		4.88		839[2], sweet, mushroom	
4-Heptanone		17.1	1.4			
2-Hexanone		2.1	1.83		12,270[fd]	
3-Hexanone, 2-methyl		16.0	4.8			
1-Hexanol, 2-ethyl		9.1	8.1		32[fd]	

*EPA/ERT sampled with air conditioning on and with air conditioning off.

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
(S)-2-Hydroxypropanoic acid		6.8	2.6		736[fd]	
4,7-Methano-1H-indene,3a,4,7,7a-tetrahydro		1.3	1.06	54	16[fd], acrid	insecticides, flame retardant
1-Methoxy-2-propyl acetate		3.9	2.8			
1-Methoxy-4-(2-propenyl) benzene	6.12	3.6	2.55			
2-Nonanone/ethyl ketone xylene isomer	5.13		1.91			
1,6-Octadiene,7-methyl-3-methylene (Myrcene)		2.6	2.1			
1-Octanol		4.0	3.5		2605[fd]	
7-Octen-2-ol, 2,6-dimethyl		3.4	2.8			
2,2-Oxybisethanol	8.43	2.34	6.47			
1-Pentanol		8.1	7.09			
2-Pentanone		0.9	0.8		61ppm[t]	
2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)		4.0	1.9			
3-Pentanone, 2,4-dimethyl		18.3	6.7			
3-Penten-2-one,4-methyl		0.5		100,205	38,098, pungent, honey-like	paint remover, insect repellant
1-Pentene	5.1	1.6	3.2		190ppb[t]	
1,2-Propanediol (Propylene glycol)		4.5	2.1			
2-Propanol (Isopropanol)		3.2	1.0			
2-Propanol, 1-(1-methylethoxy)		3.7	3.1			
2-Propanol, 1-butoxy		3.3	2.7			
2-Propanol, 1-chloro		5.8	4.78			
1-Propanol, 2-chloro-		1.6	1.31			
1-Propanol, 2-methyl		4.9	2,7	73,620	2518[fd], pungent	
1,1,2,2-Tetrachloroethene	0.174ppb, 1.2	1.5	1.02	271-1358	13,579[d], etherish	paints, cleaners, wax

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
1,1,1-Trichloroethane	65.8	60.9	25.21	3,810 ug/m^3 MRL[i]	87,035[d], sweet, etherish	varnish, paint, cleaners
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate **I**		16.4	7.6		78ppb[h]	
1-Undecene		2.9	1.3			
Acetaldehyde – **I**	16	2.7	6.61	9 RfC	336[1], pungent, fruity	wood products, tobacco, auto exhaust
Acetic acid - **I**	1450		1105	18,037[a]	1001, pungent, sour	
Acetic acid, butyl ester	3.9	4.2	3.42	24,581 NIOSH REL	176-712[2d]	wood products
Acetic acid, 2-methylpropyl ester (Isobutyl acetate)		1.4	1.13			
Acetic acid, phenylmethyl	9.28		7.1			
Acetic acid, propyl ester		1.4		834,356 TWA	1001, pleasant	fragrance
Acetone - **I**	254		208.44	421 MRL[c]	951-190,000[2d], sweet, fruity	nail polish remover, paints
Acetophenone	6.48		4.92	177[a]		
Benzaldehyde	22.1		17.6	8,671TWA	182[fd]	food additive, fragrance, detergent
Benzene	5.0		3.4	30 MRL[a]	2,492[2d], aromatic, sweet	Solvents, paints, cosmetics
Benzene, 1,2,3,5-tetramethyl		1.8	1.0			
Benzene, 1,2,4,5-tetramethyl		3.2	2.3			
Benzene, 1,3,5-trimethyl (Mesitylene)		5.3	1.86		27ppb[t]	
Benzene, 1-chloro-4-(trifluoromethyl)-		15.0	14.16			
Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)		4.6	3.48			
Benzothiazole		2.1	1.53			
Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl		4.3	1.8			
Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl		1.7	1.3			

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)		4.2	1.9			
Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-		2.6	2.02			
Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-, (1à, 3à, 6à)		4.5	0.85			
L-borneol (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-,(1S-endo)-)		3.3	1.5			
Bromoform (J) - **I**	2.0	1.7	1.86	5,174 TWA[a]	19,681[2], sweet	
Butane	2.3	2.1	1.07	595,000 TWA[a]	2,999[2], natural gas	natural gas
Butanoic acid		1.3	1.1	664,620	4ppb[fd], fruity	fragrances
Butanoic acid, 3-methylbut-2-enyl ester		0.9	0.6			
Butanol isomer - **I**	8.3		3.97	60,614 TWA[a]	1,485ppb[1], rancid, sweet	alcohol
Butyraldehyde - **I**	9.73		6.7	73,722 TWA[a]		gas, oils, wood
Butoxy ethanol isomer	2.5		1.15			
Carbon disulfide - **I**	19.6			700 ug/m^3 RfC	299-654[1], sulfur, medicinal	
Carbon tetrachloride(J)	7.0		6.5	190 MRL[c]	10,405[2d], sweet	dry cleaning
Carbonyl sulfide	21.6			135		
d-Carene isomer	17.4		11.92	111,247 TWA[a]		
Cedrene, à		5.7	0.93			
Chlorodifluoromethane	196	167	124.1	1,769,900 TWA[a]		
Chloroform	6.81	9.1	6.3	98 MRL[c]	2,920[2d], sweet, suffocating	Chlorinated water
Chloromethane	2.56	2.4	2.17	103 MRL[c]	>20,654[2], sweet, etherish	swimming pools, insulation
Cinnamic aldehyde (2-Propenal, 3-phenyl-)		3.2	2.03			
Cyclohexane(J)	3.5	1.5	1.21	6,000 RfC	1,033,129, sweet, pungent	paint remover

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
Cyclohexane, 1,2,3-trimethyl		3.3	1.5			
Cyclohexane, 1,3-dimethyl, trans		1.7	0.7			
Cyclohexane, methyl		4.4	3.1		601[fd]	
Cyclohexasiloxane, dodecamethyl		2.3	0.85			
Cyclohexanone - **I**	1.7	BDL	0.84	20,000ppb[3]		
Cyclopentasiloxane, decamethyl		30.2	15.01			
Cyclotetrasiloxane, octamethyl		14.8	11.88			
Decahydro methanoazulene isomer		2.5	1.11			
Decanal		4.1	2.51		0.1ppb[t]	
Decane, 2,2-dimethyl		7.7	6.43			
Decane, 2,6-dimethyl		11.0	6.51			
Decane, 3,6-dimethyl		14.9	5.69			
Decane, 3,7-dimethyl-		12.3	1.23			
Decane, 3-methyl		28.6	10.72			
Decane, 5-methyl		10.9	1.09			
Dichlorofluoromethane	2.0		1.81	42,127 TWA[a]	odorless	coolants
Diethylene glycol (2,2'-oxybisethanol)		4.2	1.6			
Diisopropyl disulfide(J)	94.7		11.9			
Dimethyl cyclohexene isomer(J)		2.48	1.1			
dimethyl decane isomer	3.69		1.74			
Dimethylethylcyclohexanol isomer	5.24	2.87	1.59			
N-Dodecane	4.2		3.14		14,184[l], metallic, ozonic	fragrance, gas
Estragole (4-Allylanisole)		5.6	3.96			

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
Ethanol - **I**	21.1	9.9	15.32	94,274 TWA[a]	18,855[hsdb], mild	lotion, cologne, fuel, fungicide
Ethanol, 2-ethoxy		1.1	1.0	55,215[a]	3.2[fd]	
Ethanol, 2-ethoxy, acetate		1.1		404,908[a]	302, pleasant	
Ethylacetate - **I**	11.9	12	11.2	1,441,309[a]	23,061[2d]	nail polish remover
Ethylbenzene	11.6	5.3	10.16	1000 RfC	399-26,013[2], aromatic, oily	Solvent
Formaldehyde - **I**	491		398	100[5]	1,068[1], pungent	wood products, disinfectant, textile, paints
Formic acid - **I**	2879		2540	9000 NIOSH[3], 0.15screening[4]	4,188[2], sharp	paint remover, preservative, insecticide
Furan, 2-pentyl	22.4	BDL	16.6			
Furfural - **I**	7.7		5.74	7,861 TWA[a]	7.9-2,500[2], pungent, almond	sol vent, flavoring, auto exhaust
Heptanal (Heptaldehyde)		8.6	7.17	400,000ppb[3]	3ppb[t]	
Heptane, 2,2,4,6,6-pentamethyl - **I**		19.0	15.79	400,000ppb[3]		
Heptane, 2,2,6,6-tetramethyl- **I**		10.5	3.25	400,000ppb[3]		
Heptane, 2,4-dimethyl- **I**	3.4		1.68	400,000ppb[3]		
Heptane, 4-ethyl-2,2,6,6-tetramethyl- **I**		9.4	3.72	400,000ppb[3]		
Heptane, 5-ethyl-2,2,3-trimethyl—**I**		40.8	34.0	400,000ppb[3]		
Heptane, 2-methyl- **I**		1.9	1.5	400,000ppb[3]		
Heptanol	14.2	BDL	10.66	10,011	22.7[1], fragrant	paint, textiles, solvent
Hexanal - **I**	301		91.84		57.3, grass, fruity	
Hexane - **I**	2	1.2	1.7	700 RfC[e]	458,323, faint, peculiar	adhesives, solvent
Hexane, 1-methoxy- **I**		1	0.41	500,000ppb TLV[3]		
Hexane, 2-methyl- **I**		9.6	3.68	500,000ppb TLV[3]		
Hexane, 3-methyl- **I**		14.0	4.12	500,000ppb TLV[3]		
Hexanoic acid	9.78		7.56	14,992	61.7[1], goat-like	fragrance

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
Hydrochloric acid – **I**	0.07	BDL	BDL		381-14,928[2], sharp	
Hydrogen sulfide – **I**	8.0		2.1	27.9 MRL[i]	1.4-181[2d], rotten eggs	
Isobornyl acetate	4.53	3.3	3.51		pine	flavorings
à-Isomethyl ionone		2.1	0.88			
Isopropyl alcohol	92.2	126.8	86.71	7,866	2,458-14,994[2d]	rubbing alcohol, candy, insect repellant
Limonene & isomers - **I**	81.4	49	80.7	111,247	2,447[1], lemon, sweet	cleaners, paints,wood
Longifolene		2.8	1.7			
Menthol	31.2	BDL	6.89			
Menthyl acetate		6.0	2.82			
Methylene chloride - **I**	9.1	13.6	8.13	1,042 MRL[c]	4167-152,785[2]	paint stripper, mothballs
Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)		2.8	1.74			
Naphthalene (J) – **I**	4.5	4.6	4.19	3.0 RfC	78.5[1], tar, mothballs	Mothballs, shampoo,cleaners
Naphthalene, decahydro-1,6-dimethyl-		4.3	1.8			
Nitric acid – **I**	BDL		BDL	5,153 TWA[a]	acrid, suffocating	
Nonanal	84.2		57.01		12.8[1], rose-orange	cosmetics, flavorings
Nonane		2.1	1.77	1,050,000 TWA[3]	650ppm[t]	
Nonane, 2,2,4,4,6,8,8-heptamethyl		0.6	0.18			
Nonane, 3,7-dimethyl		19.6	15.76			
Nonane, 3-methylene		2.7	2.0			
Octanal - **I**	56.0		39.85	59,995[a]	7.3[1], fruity	perfumes, flavorings
Octane, 2,3,6-trimethyl- **I**		2.7	0.98	300,000ppb TLV[3]		

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
Octane, 2,4,6-trimethyl- **I**		26.7	16.57	300,000ppb TLV[3]		
Octane, 2,5,6-trimethyl- **I**		20.7	9.7	300,000ppb TLV[3]		
Octane, 2,6-dimethyl- **I**		3.0	2.08	300,000ppb TLV[3]		
Octane, 3-ethyl-2,7-dimethyl- **I**		11.5	7.46	300,000ppb TLV[3]		
Octanol	11.6		8.68	265,849 TWA[a]	30.8[1]	
Pentadecane(J)	7.14	BDL	2.0			
Pentanal	23.5	17.6	13.46		21.1[1]	flavorings, rubber
Pentane	12.7	9.7	9.92	1,769,325[a]	350,916[2]	
Phenol - **I**	5.62	4.07	4.85	770	180-423[1], medicinal, acid	gas & diesel, tobacco smoke
Pinene & isomers	669		541	20,000ppb TLV[3]	3,849[1], pine	solvent
Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)		79.5	68.46			
Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)		39.5	31.54			
Propanal, 2-methyl		10.1	7.1	216,796	6[fd], pungent	
Propanoic acid		2.6		30,266	17	preservative
Propanoic acid, 2-methyl-,2,2-dimethyl-1-(2-hydroxy-1-….	150		110.15	64,622[B]	595-6,462[2d], sharp, pungent	solvent
Propanoic acid, 2-hydroxy-, ethyl ester		7.0	1.54			
Propanoic acid, 2-methyl	167		123.63		5[fd]	flavoring, pesticide
Propanoic acid, 2-methyl anhydride				1,939	10	perfumes, flavors
Propionaldehyde - **I**	15.9		10.24	47,526[a]	64.2[1], acrid, pungent	tobacco, disinfectant
Siloxane compound		933	341			
Styrene (J) - **I**		6.3	5.18	851[c]	72-8,082, sharp, sweet	plastics, paints,rubber

Mean and maximum concentrations in Test homes during EPA/ERT and FDOH sampling and associated health-based screening guidelines, odor characteristics and common sources.

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Health-based Inhalation Screening Guidelines (ug/m^3)	Odor threshold & characteristic (ug/m^3)	Uses/Sources
	AC Off	AC On				
Styrene, 2,4-dimethyl		1.7	0.8			
Styrene, 2,5-dimethyl		2.6	1.7			
Sulfur dioxide - **I**	16.8	(.2)	(.11)david's	26.2 MRL[t]	2,622, strong, suffocating	
Sulfuric acid - **I**	0.05 mg/m3	BDL	0.18	200	Odorless	
N-Tetradecane	14.7		6.09			
Thiophene, 2-hexyl		3.7	2.46			
Thujopsene		1.8	1.39			
Toluene		15.4	12.49	5,000 RfC	5,839[1], sour, burnt	Solvent, paints, dyes
Trichlorofluoroethane	0.718ppb?	0.767ppb?	0.35ppb		etherish, sweet	refrigerant, insulation
Trichlorofluoromethane	11.9	12.6	6.01	5,063,272[a]		Coolant
Trichloropropane isomer		42.81	2.05	300,000 TWA[3], 18[4]		
Trimethyl benzene isomer	10.5		9.49	98,160 TWA[a]	785-1,129[1]	
Trimethyl pentene isomer		1.67	0.84			
TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)		2.1	1.3		12[fd]	
Undecane		13.3	10.81	6,380	5,551[fd]	
Undecane, 2-methyl		7.4	1.34			
Undecane, 4-methyl		8.7	1.61			
Vinyl acetate	8.52		6.62	10ppb[t]		
Xylene (para and/or meta)		20.3	16.69	100 RfC	398ppb[h]	
Xylene, ortho		8.1	6.75	100 RfC		
Xylene & isomers - **I**	20.3	13.6	14.59	100 RfC	100-1,387[1], sweet	Solvents, paints, cleaners

Health guidelines and Odor threshold: [1]values represent 50% odor detection [Devos, 1990]; [2]whether value represents odor detection or recognition thresholds not specified [AIHA, 1995]; [2d]odor detection, [3]ACGIH 2009, [AIHA, 1990], MRLa=acute, MRLi=intermediate, MRLc=chronic, [dk]FDOH, [g]Weisel 2006, [h]Hodgson 2000, [t]ASTM1973, **I** = irritant, J = at method/quantitation limit in EPA/ERT data, [4]EPA regional ambient air screening level

Appendix G

Detectable Chemicals falling below the Quantitation limit

1,1'-Biphenyl
1,3-Butadiene, 2-methyl
1-Butanol, 2-ethyl
1-Butanol, 3-methyl
1H-Cycloprop[e]azulene, 1a,2,3,4,4a,5,6,7b-octahydro-1,1,4,7-tetramethyl-, [1aR-(1aà,4à,4aá,7bà)]
1-Nonadecene
1-Nonene
2,6-Di-tert-butyl-4-methylphenol (BHT)
2-Butene, 2-methyl
2-Cyclohexen-1-one, 3,5,5-trimethyl-
2-Pentanol, acetate
2-Pentene, 4,4-dimethyl, (E)
2-Propenal, 2-methyl
4-Phenylcyclohexene
Acetate, methyl (Acetic acid, methyl ester)
Acetic acid, 1,7,7-trimethyl-bicyclo[2.2.1]hept-2-yl ester
Acetic acid, propyl ester (Propyl acetate)
Benzene, 1-(1,1-dimethylethyl)-3-ethyl
Benzene, 1-ethyl-4-(1-methylethyl)
Benzene, 2-ethyl-1,4-dimethyl
Benzenepropanoic acid, ethyl ester
Butane, 1-chloro
Butanoic acid, 3-methylbut-2-enyl ester
Coumarin (2H-1-Benzopyran-2-one)
Cyclohexane, t-1,2-dimethyl
Cyclohexene, 3,3,5-trimethyl
Cyclopentane
Cyclopentane, methyl
Cyclopentanone, 3-methyl
Decahydro-4,4,8,9,10-pentamethylnaphthalene
Decyl disulfide
Ethane, 1,2-dichloro
Ethanol, 2-ethoxy
Ethene, 1,1,2,2-tetrachloro (Tetrachloroethylene)
Formic acid (Methanoic acid)
Furan, 2-ethyl
Furan, 2-methyl-
Heptadecane, 7-methyl-
Heptane, 2,4-dimethyl
Hexane, 2,4-dimethyl
Methyl sulfide (Methane, thiobis)
Naphthalene, 1,2,3,4-tetrahydro-1,4-dimethyl
Naphthalene, 1,2,3,4-tetrahydro-5-methyl
Naphthalene, 2-methyl

Naphthalene, decahydro-2-methyl
N-Nitroso-2-methyl-oxazolidine
Nonane, 2,2,4,4,6,8,8-heptamethyl
Octadecane, 2-methyl-
Octane, 2,3-dimethyl
Pentanal, 3-methyl
Pentane, 2,3-dimethyl
Pentane, 2,4-dimethyl
Pentane, 2-methyl
Phenol, m-tert-butyl
Phenyl isobutyrate
Propane, 1,3-dimethoxy-
Propanoic acid
Propanoic acid, 2-methyl-, anhydride (Isobutyric anhydride)
Pyrazine, methyl
Pyridine
Tetrahydro-1,3-oxazine-2-thione
Thiophene, 2-butyl
n-Tridecane

Appendix H
Summary of Statistical Data for Florida and Louisiana

Statistical Methodologies

Indoor air measurements were compared between Units and per analyte using non-parametric statistical analyses. Non-parametric tests were chosen due to the large number of non-detects and small sample sizes (ranging from N=3 to 16). The choice of which non-parametric test to be used was determined by the number of Units to be compared and the number of reporting limits for a given parameter (analyte). All statistical comparisons were run with alpha set to 0.05. If a reporting limit exceeded detected values for an analyte (i.e., estimated values under the reporting limit), a comparison could not be computed. Additionally, if greater than 80 percent of the measurements were non-detects (ND) for an analyte, no comparison was computed.

Indoor air measurements were collected from two Units when the air conditioning was 'on' and from three Units when the air conditioning was 'off', resulting in two sets of conditions. Replicate measurements were collected from Location 1 (except for TO 15 VOCs) in each Unit and a single measurement collected from Location 2 under both conditions. Computed means were weighted to ensure that Location 1 did not overly-influence the computations.

Comparisons made when the air conditioning was 'on' included the Wilcoxon-Rank-Sum (WRS) test, the Wilcoxon-Mann-Whitney test (WMW) and Gehan's test. The WRS and WMS tests are both non-parametric tests which compare the ranks of the data from two populations. These tests provide equivalent results and their use was based on the convenience of the software package being used at the time. SAS® employs the WRS test and ProUCL employs the WMW test. When multiple reporting limits were reported for a single analyte and non-detect measurements were reported for that analyte, Gehan's Test was computed using ProUCL version 4.0. Gehan's Test is a statistical method which accommodates multiple reporting limits.

When the air conditioning was off the Kruskal-Wallis test was used to determine if there was a statistically significant difference between the measurements from the three units (more than 2 populations). The Kruskal-Wallis test was computed using SAS®version 9.0 for Windows. If the resulting probability-value (p-value) was greater than 0.05 it can be assumed that there is no statistical difference between the measurements of the three Units. If the p-value was less than 0.05, additional follow-up testing was conducted to identify which Units were different from each other. Dunn's method was used for the follow-up comparisons of the medians. Units 100 and 102 were compared with 101.

A similar statistical methodology was followed when evaluating the tentatively identified compounds (TICs) data sets; however zeros were used in place of compounds which were not detected at a given location. Descriptive statistics and statistical comparisons for the TIC datasets should be viewed with caution given the unknown level of variability which was introduced by including zeros in these

analyses. Compilation of all data including minimum, maximum and average concentrations, probability values and conclusions for target and non-target compounds is presented in this Appendix. Statistical analysis was carried out using median values though means are expressed in the data tables.

Descriptive Statistics for Indoor Drywall Sampling Events in Florida - Sulfides
Analytical Method: ASTM D5504-08

Analyte	Air Conditioning Off/On	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)
Hydrogen Sulfide	OFF	100	8	100	ND	ND
		101	8	100	ND	ND
		102	16	100	ND	ND
		102 (3-Liter Tedlar Bag)	4	100	ND	ND
	ON	100	8	100	ND	ND
		101	8	100	ND	ND
Carbonyl Sulfide	OFF	100	8	100	ND	ND
		101	8	100	ND	ND
		102	16	100	ND	ND
		102 (3-Liter Tedlar Bag)	4	0	4.75	8.81
	ON	100	8	100	ND	ND
		101	8	100	ND	ND
Carbon Disulfide	OFF	100	8	100	ND	ND
		101	8	100	ND	ND
		102	16	19	ND	2.64*
		102 (3-Liter Tedlar Bag)	4	0	5.96	6.37
	ON	100	8	100	ND	ND
		101	8	ND	ND	ND

ppbv: parts per billion by volume
ND: non-detect
%: percent
*Detected values are less than the greatest reporting limit
Samples were collected in a 1-Liter Tedlar® bags (Zefon International) unless otherwise indicated.
3-liter Tedlar Bags (SKC) were used for experimental purposes

Descriptive Statistics for Outdoor Air Sampling Events in Florida - Sulfides

Analytical Method: ASTM D5504-08

Analyte	Unit*	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)
Hydrogen Sulfide	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	100	ND	ND
	102 (3-Liter Tedlar Bag)	1	100	ND	ND
Carbonyl Sulfide	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	100	ND	ND
	102 (3-Liter Tedlar Bag)	1	0	6.65	6.65
Carbon Disulfide	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	100	ND	ND
	102 (3-Liter Tedlar Bag)	1	0	3.18*	3.18*

ppbv: parts per billion by volume
ND: non-detect
%: percent
*Detected values are less than the greatest reporting limit
Samples were collected in a 1-Liter Tedlar® bags (Zefon International) unless otherwise indicated.
3-liter Tedlar Bags (SKC) were used for experimental purposes

Descriptive Statistics for Indoor Air Sampling Events in Florida - Aldehydes
Analytical Method: EPA TO-11A

Analyte	Air Conditioning (On/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Acetaldehyde	OFF	100	8	0	14	19	16.17	2.44	Kruskal-Wallis	0.1016	NO	100 = 101 = 102
		101	8	0	12	15	13.67	1.54				
		102	16	0	13	21	17.21	3.60				
	ON	100	8	0	9.9	14	11.98	2.65	WRS	0.7615	NO	100 = 101
		101	8	0	12	15	13.25	0.94				
Benzaldehyde	OFF	100	8	0	1.4	2.6	1.96	0.53	Kruskal-Wallis	0.0017	YES	100 = 101 101 = 102
		101	8	0	2.6	3.1	2.86	0.16				
		102	16	0	3.1	5.1	4.06	0.79				
	ON	100	8	0	1	1.7	1.31	0.33	WRS	0.6631	NO	100 = 101
		101	8	0	0.97	1.6	1.39	0.22				
Butyraldehyde	OFF	100	8	0	0.89	1.6	1.26	0.39	Kruskal-Wallis	0.0044	YES	100 = 101 101 ≠ 102
		101	8	0	0.23	1.1	0.49	0.38				
		102	16	0	1.2	3.3	2.27	0.93				
	ON	100	8	0	0.68	1.2	0.91	0.27	WRS	0.0202	NO	100 ≠ 101
		101	8	0	0.39	1.2	0.29	0.39				
Formaldehyde	OFF	100	8	0	91	130	109.00	17.39	Kruskal-Wallis	0.2581	NO	100 = 101 = 102
		101	8	0	87	100	95.25	6.00				
		102	16	0	79	170	122.54	37.26				
	ON	100	8	0	58	75	69.25	7.49	WRS	0.0202	NO	100 ≠ 101
		101	8	0	35	50	42.50	4.80				
Isovaleraldehyde	OFF	100	8	0	0.4	0.57	0.49	0.10	Kruskal-Wallis	0.0079	YES	100 = 101 101 = 102
		101	8	0	0.55	0.85	0.70	0.15				
		102	16	0	0.53	1.3	0.93	0.29				
	ON	100	8	0	0.21	0.44	0.32	0.12	WRS	0.3094	NO	100 = 101
		101	8	0	0.32	0.5	0.41	0.05				
Propionaldehyde	OFF	100	8	0	1.6	2.4	2.02	0.47	Kruskal-Wallis	0.0017	YES	100 = 101 101 = 102
		101	8	0	2.5	3	2.83	0.20				
		102	16	0	3.1	5.7	4.37	1.08				
	ON	100	8	0	1.1	1.6	1.37	0.31	WRS	0.1913	NO	100 = 101
		101	8	0	1.4	2	1.68	0.18				
Valeraldehyde	OFF	100	8	0	2.2	3.7	2.85	0.78	Kruskal-Wallis	0.0023	YES	100 = 101 101 = 102
		101	8	0	3.7	5.3	4.58	0.84				
		102	16	0	4.8	10	7.43	2.37				
	ON	100	8	0	1.5	2.4	1.96	0.50	WRS	0.0209	NO	100 ≠ 101
		101	8	0	2.2	3.7	2.95	0.45				
n-Hexaldehyde	OFF	100	8	0	7.9	16	12.43	3.82	Kruskal-Wallis	0.0062	YES	100 = 101 102 = 101
		101	8	0	13	20	16.83	3.11				
		102	16	0	16	34	25.38	7.69				
	ON	100	8	0	5.6	12	7.66	2.62	WRS	0.1489	NO	100 = 101
		101	8	0	8.1	12	9.60	1.97				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WRS: Wilcoxon-Rank-Sum test

Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive Statistics for Outdoor Air Sampling Events in Florida - Aldehydes
Analytical Method: EPA TO-11A

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)	Mean Detected Values (ppbv)	Standard Deviation (ppbv)
Acetaldehyde	100	2	0	0.3	0.8	0.55	0.354
	101	4	75	ND	0.3	0.3	N/A
	102	4	25	ND	0.77	0.577	0.19
Butyraldehyde	100	2	100	ND	ND	ND	N/A
	101	4	100	ND	ND	ND	N/A
	102	4	75	ND	0.23	0.23	N/A
Formaldehyde	100	2	50	ND	2.1	2.1	N/A
	101	4	25	ND	2.4	1.647	0.781
	102	4	0	0.98	4.1	2.77	1.456

ppbv: parts per billion by volume
ND: non-detect
%: percent
N/A: not applicable

Descriptive Statistics for Indoor Air Sampling Events in Florida - Acids
Analytical Method: NIOSH 7903 Modified

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (mg/m3)	Maximum (mg/m3)
Hydrochloric Acid	OFF	100	8	88	ND	0.044
		101	8	100	ND	ND
		102	16	100	ND	ND
	ON	100	8	100	ND	ND
		101	8	100	ND	ND
Sulfuric Acid	OFF	100	8	100	ND	ND
		101	8	88	ND	0.05
		102	16	81	ND	0.039
	ON	100	8	100	ND	ND
		101	8	100	ND	ND

mg/m3: milligrams per cubic meter
ND: non-detect
%: percent

Statistical comparisons could not be made between Units due to the high percentage of NDs.

Descriptive Statistics for Outdoor Air Sampling Events in Florida - Acids
Analytical Method: NIOSH 7903 Modified

Analyte	Unit	Number of Observations	% Nondetects	Minimum (mg/m3)	Maximum (mg/m3)
Hydrochloric Acid	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	100	ND	ND
Sulfuric Acid	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	25	ND	0.051

mg/m3: milligrams per cubic meter
ND: non-detect
%: percent

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Benzene	OFF	100	8	0	0.71	1.3	1.00	0.29	Kruskal-Wallis	0.08	N/A	100 = 101 = 102
		101	8	0	1.08	1.31	1.22	0.08				
		102	16	0	0.93	2.88	1.61	0.63				
	ON	100	7	14	ND	0.87*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	0	0.65	0.855	0.77	0.09				
Bromoform	OFF	100	8	13	ND	0.2*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				
		102	16	100	ND	ND	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100=101
		101	8	100	ND	ND	N/A	N/A				
Cumene	OFF	100	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100=101=102
		101	8	100	ND	ND	N/A	N/A				
		102	16	100	ND	ND	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100=101
		101	8	100	ND	ND	N/A	N/A				
Cyclohexane	OFF	100	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	25	ND	0.87*	N/A	N/A				
		102	16	100	ND	ND	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	63	ND	0.59*	N/A	N/A				
Ethylbenzene	OFF	100	8	0	0.47	0.72	0.60	0.12	Kruskal-Wallis	0.0182	Yes	100 ≠ 101 101 = 102
		101	8	0	0.83	1.19	1.12	0.17				
		102	16	0	0.50	1.19	0.84	0.22				
	ON	100	7	14	ND	0.48*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	0.56	0.75	0.66	0.09				
Mesitylene	OFF	100	8	0	0.24	0.3	0.27	0.03	WMW	0.0304	NA	100 ≠ 101 101 vs. 102: Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	0	0.28	0.45	0.39	0.05				
		102	16	100	ND	ND	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	38	ND	0.245*	N/A	N/A				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test

Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* All detected values are below the greatest Reporting Limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs (continued)
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Methylcyclohexane	OFF	100	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	0	0.31	0.40	0.36	0.01				
		102	16	100	ND	ND	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	88	ND	0.26*	N/A	N/A				
Methylisobutylketone	OFF	100	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				
		102	16	69	ND	0.86*	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100=101
		101	8	100	ND	ND	N/A	N/A				
ortho-Xylene	OFF	100	8	0	0.53	0.80	0.68	0.11	Kruskal-Wallis	0.0141	Yes	100 ≠ 101 101 ≠ 102
		101	8	0	0.95	1.38	1.18	0.15				
		102	16	0	0.41	0.95	0.69	0.16				
	ON	100	7	14	ND	0.525	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	0	0.63	0.77	0.71	0.06				
para-Xylene	OFF	100	8	0	1.33	2.01	1.67	0.31	Kruskal-Wallis	0.0085	Yes	100 ≠ 101 101 ≠ 102
		101	8	0	2.17	3.43	2.87	0.41				
		102	16	0	1.33	2.46	1.96	0.29				
	ON	100	7	14	ND	1.275	N/A	N/A	Gehan's	0.0187	N/A	100 ≠ 101
		101	8	0	1.37	1.82	1.60	0.22				
Styrene	OFF	100	8	50	ND	0.45*	N/A	N/A	WMW	0.0084	N/A	100 vs. 101: Greatest reporting limit is greater than all detects. Cannot compare. 101 ≠ 102
		101	8	0	0.54	0.8	0.68	0.05				
		102	16	0	0.63	1.68	1.14	0.31				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	13	ND	0.54*	N/A	N/A				
Tetrachloroethene	OFF	100	8	38	ND	0.31*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				
		102	16	81	ND	0.37*	N/A	N/A				
	ON	100	7	86	ND	0.22*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test

Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* All detected values are below the greatest Reporting Limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs (continued)
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Toluene	OFF	100	8	0	2.99	4.64	3.75	0.73	Kruskal-Wallis	0.0035	Yes	100 = 101 101 ≠ 102
		101	8	0	3.02	4.28	3.80	0.37				
		102	16	0	1.42	2.37	1.95	0.30				
	ON	100	7	14	ND	2.95*	N/A	N/A	Gehan's	1	N/A	100 = 101
		101	8	0	1.685	2.54	2.12	0.47				
D-Limonene	OFF	100	8	0	14	15.5	14.48	0.39	Kruskal-Wallis	0.0017	Yes	100 ≠ 101 101 = 102
		101	8	0	2.25	4.3	3.44	0.52				
		102	16	0	5.62	9.16	7.43	1.14				
	ON	100	7	14	ND	8.055	6.06	3.03	Gehan's	0.248	N/A	100 = 101
		101	8	0	2.21	2.475	2.35	0.12				
n-Decane	OFF	100	8	0	0.25	0.33	0.29	0.03	Kruskal-Wallis	0.0145	Yes	100 ≠ 101 101 = 102
		101	8	0	0.46	0.63	0.56	0.05				
		102	16	0	0.52	0.64	0.57	0.05				
	ON	100	7	71	ND	0.22*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	0	0.385	0.44	0.42	0.02				
N-Dodecane	OFF	100	8	0	0.22	0.25	0.24	0.01	Kruskal-Wallis	0.0038	Yes	100 = 101 101 ≠ 102
		101	8	0	0.17	0.26	0.23	0.02				
		102	16	0	0.28	0.61	0.45	0.13				
	ON	100	7	86	ND	0.19*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	33	ND	0.17*	N/A	N/A				
n-Heptane	OFF	100	8	75	ND	0.28*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	0	0.56	0.67	0.63	0.02				
		102	16	19	ND	0.52*	N/A	N/A				
	ON	100	7	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	38	ND	0.48*	N/A	N/A				
n-Hexadecane	OFF	100	8	0	0.13	0.17	0.15	0.01	Kruskal-Wallis	0.017	Yes	100 ≠ 101 101 = 102
		101	8	0	0.16	0.21	0.20	0.03				
		102	16	0	0.14	0.24	0.20	0.03				
	ON	100	7	86	ND	0.13*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test

Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* All detected values are below the greatest Reporting Limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
n-Nonanal	OFF	100	8	0	6.22	9.34	7.73	1.44	Kruskal-Wallis	0.0085	Yes	100 = 101 101 = 102
		101	8	0	7.19	9.93	8.60	1.00				
		102	16	0	7.65	18.3	12.82	2.81				
	ON	100	7	14	ND	7.63	6.11	1.33	Gehan's	0.773	N/A	100=101
		101	8	0	4.75	5.97	5.28	0.52				
n-Pentadecane	OFF	100	8	0	0.20	0.25	0.22	0.02	Kruskal-Wallis	0.006	Yes	100 = 101 101 ≠ 102
		101	8	0	0.19	0.28	0.24	0.03				
		102	16	0	0.25	0.45	0.34	0.06				
	ON	100	7	14	ND	0.20*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	63	ND	0.14*	N/A	N/A				
n-Tetradecane	OFF	100	8	0	0.28	0.36	0.32	0.03	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	13	ND	0.17*	N/A	N/A				
		102	16	0	0.18	0.33	0.25	0.03				
	ON	100	7	14	ND	0.27*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				
n-Tridecane	OFF	100	8	0	0.14	0.21	0.18	0.03	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	100	ND	ND	N/A	N/A				
		102	16	100	ND	ND	N/A	N/A				
	ON	100	7	86	ND	0.15*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		101	8	88	ND	0.55*	N/A	N/A				
n-Undecane	OFF	100	8	0	0.20	0.31	0.25	0.05	Kruskal-Wallis	0.0134	Yes	100 = 101 101 = 102
		101	8	0	0.59	0.81	0.72	0.04				
		102	16	0	0.47	0.95	0.74	0.14				
	ON	100	7	43	ND	0.23*	N/A	N/A	Gehan's	0.0736	N/A	100=101
		101	8	0	0.48	0.57	0.51	0.03				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test

Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* All detected values are below the greatest Reporting Limit.

Descriptive Statistics for Outdoor Air Sampling Events in Florida - VOCs
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)
Benzene	100	3	67	ND	0.78*
	101	4	100	ND	ND
	102	4	75	ND	0.46
Ethylbenzene	100	3	67	ND	0.43
	101	4	100	ND	ND
	102	4	100	ND	ND
ortho-Xylene	100	3	67	ND	0.51*
	101	4	100	ND	ND
	102	4	100	ND	ND
para-Xylene	100	3	67	ND	1.21
	101	4	100	ND	ND
	102	4	100	ND	ND
Tetrachloroethene	100	3	67	ND	0.28*
	101	4	100	ND	ND
	102	4	100	ND	ND
Toluene	100	3	33	ND	2.62
	101	4	100	ND	ND
	102	4	50	ND	0.46*
D-Limonene	100	3	67	ND	7.34
	101	4	100	ND	ND
	102	4	100	ND	ND
n-Decane	100	3	67	ND	0.2*
	101	4	100	ND	ND
	102	4	100	ND	ND
n-Dodecane	100	3	67	ND	0.17*
	101	4	100	ND	ND
	102	4	100	ND	ND
n-Nonanal	100	3	67	ND	6.48
	101	4	100	ND	ND
	102	4	100	ND	ND
n-Pentadecane	100	3	67	ND	0.15*
	101	4	100	ND	ND
	102	4	100	ND	ND
n-Tetradecane	100	3	67	ND	0.22*
	101	4	100	ND	ND
	102	4	100	ND	ND
n-Undecene	100	3	67	ND	0.16*
	101	4	100	ND	ND
	102	4	100	ND	ND

ppbv: parts per billion by volume
ND: non-detect
%: percent
* Detected value is less than the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs

Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON+B38/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Dichlorodifluoromethane	OFF	100	4	0	0.413	0.509	0.46	0.04	Kruskal-Wallis	0.09	N/A	100 = 101 = 102
		101	4	0	0.365	0.48	0.41	0.05				
		102	8	0	0.449	0.516	0.48	0.03				
	ON	100	4	0	0.443	0.486	0.46	0.02	WRS	0.3123	N/A	100 = 101
		101	4	0	0.347	0.457	0.42	0.05				
Chloromethane	OFF	100	4	0	0.851	1.24	1.01	0.17	Kruskal-Wallis	0.0132	Yes	100 = 101 101 ≠ 102
		101	4	0	0.637	0.868	0.76	0.10				
		102	8	0	0.969	1.16	1.05	0.07				
	ON	100	4	0	0.718	1.17	0.95	0.24	WRS	0.1564	N/A	100=101
		101	4	0	0.618	0.892	0.70	0.13				
Chloroethane	OFF	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101 101 vs 102: Can't run comparison ; greater than 80% NDs.
		101	4	100	ND	ND	N/A	N/A				
		102	8	88	ND	0.068	N/A	N/A				
	ON	100	4	75	ND	0.07	0.07	N/A	WRS	0.4533	N/A	100=101
		101	4	100	ND	ND	N/A	N/A				
Acetone	OFF	100	4	0	21.5	26.8	25.05	2.46	Kruskal-Wallis	0.0027	Yes	100 = 101 101 ≠ 102
		101	4	0	18.6	26.1	21.80	3.51				
		102	8	0	69.1	107	87.75	13.35				
	ON	100	4	0	14.4	27.3	20.48	6.88	WRS	1	N/A	100 = 101
		101	4	0	15.2	18.6	16.38	1.54				
Trichlorofluoromethane	OFF	100	4	0	0.257	0.331	0.29	0.03	Kruskal-Wallis	0.0631	N/A	100 = 101 = 102
		101	4	0	0.199	0.28	0.25	0.04				
		102	8	0	0.266	0.315	0.30	0.02				
	ON	100	4	0	0.277	0.337	0.31	0.03	WRS	0.06	N/A	100 = 101
		101	4	0	0.223	0.289	0.25	0.03				
Isopropyl Alcohol	OFF	100	4	0	31.7	37.5	35.28	2.59	Kruskal-Wallis	0.014	Yes	100 ≠101 101 = 102
		101	4	0	3.23	6.17	4.60	1.28				
		102	8	0	3.52	6.6	4.82	1.06				
	ON	100	4	0	8.34	51.6	25.04	19.09	WRS	0.03	N/A	100 ≠ 101
		101	4	0	3	5.47	4.25	1.18				

ppbv: parts per billion by volume

ND: non-detect

%: percent

WRS: Wilcoxon Rank Sum test

Statistical testing was conducted with alpha=0.05.

For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Gehan's comparisons were performed using ProUCL version 4.0.

Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive statistics are based on detected values only.

* All detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs (continued)

Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Methylene Chloride	OFF	100	4	0	1.61	2.62	2.12	0.45	Kruskal-Wallis	0.0017	Yes	100 ≠101 101 = 102
		101	4	0	0.068	0.0929	0.08	0.01				
		102	8	0	0.13	0.194	0.16	0.02				
	ON	100	4	0	0.972	3.91	2.34	1.44	WRS	0.0265	N/A	100 ≠ 101
		101	4	75	ND	0.0788	0.08	N/A				
Trichlorotrifluoroethane	OFF	100	4	0	0.0755	0.099	0.09	0.011	Kruskal-Wallis	0.5512	N/A	100 = 101 = 102
		101	4	0	0.0732	0.107	0.09	0.014				
		102	8	0	0.0904	0.104	0.10	0.005				
	ON	100	4	25	ND	0.089	0.09	0.003	WRS	0.3123	N/A	100 = 101
		101	4	0	0.0668	0.107	0.10	0.020				
trans-1,2-Dichloroethene	OFF	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101 101 vs 102: Can't run comparison ; greater than 80% NDs.
		101	4	100	ND	ND	N/A	N/A				
		102	8	88	ND	0.113	N/A	N/A				
	ON	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101
		101	4	100	ND	ND	N/A	N/A				
MTBE	OFF	100	4	100	ND	ND	N/A	N/A	Kruskal-Wallis	0.0007	Yes	100 ≠ 101 101 ≠ 102
		101	4	0	0.322	1.4	0.92	0.52				
		102	8	100	ND	ND	N/A	N/A				
	ON	100	4	100	ND	ND	N/A	N/A	WRS	0.0211	N/A	100 ≠ 101
		101	4	0	0.396	1.36	0.79	0.47				
Vinyl Acetate	OFF	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101 101 ≠ 102
		101	4	100	ND	ND	N/A	N/A				
		102	8	0	1.43	2.42	1.88	0.36				
	ON	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101
		101	4	100	ND	ND	N/A	N/A				
2-Butanone	OFF	100	4	50	ND	2.05	1.87	0.26	Kruskal-Wallis	0.0642	N/A	100 = 101 =102
		101	4	0	1.1	3	2.11	0.86				
		102	8	0	1.91	3.41	2.60	0.56				
	ON	100	4	0	0.703	2.16	1.45	0.78	WRS	0.8852	N/A	100 = 101
		101	4	0	1.38	2.09	1.68	0.31				

ppbv: parts per billion by volume

ND: non-detect

%: percent

WRS: Wilcoxon Rank Sum test

Statistical testing was conducted with alpha=0.05.

For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Gehan's comparisons were performed using ProUCL version 4.0.

Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive statistics are based on detected values only.

* All detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs (continued)

Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Ethyl Acetate	OFF	100	4	25	ND	3.3	3.11	0.27	Kruskal-Wallis	0.0107	Yes	100 = 101 101 = 102
		101	4	0	0.43	1.01	0.78	0.28				
		102	8	0	0.261	1.04	0.63	0.29				
	ON	100	4	0	0.578	3.23	1.73	1.30	WRS	0.3123	N/A	100 = 101
		101	4	0	0.387	0.956	0.62	0.28				
Hexane	OFF	100	4	50	ND	0.207	0.20	0.01	Kruskal-Wallis	0.0053	Yes	100 ≠ 101 101 ≠ 102
		101	4	0	0.719	2.2	1.49	0.64				
		102	8	0	0.177	0.337	0.25	0.06				
	ON	100	4	0	0.0674	0.215	0.15	0.07	WRS	0.0304	N/A	100 ≠ 101
		101	4	0	0.569	2.38	1.26	0.86				
Chloroform	OFF	100	4	0	1.14	1.4	1.29	0.12	Kruskal-Wallis	0.0017	Yes	100 ≠101 101 = 102
		101	4	0	0.0695	0.125	0.10	0.03				
		102	8	0	0.254	0.59	0.42	0.10				
	ON	100	4	0	0.515	1.86	1.16	0.65	WRS	0.0294	N/A	100 ≠ 101
		101	4	50	ND	0.114	0.10	0.02				
Tetrahydrofuran	OFF	100	4	0	0.28	0.513	0.37	0.10	Kruskal-Wallis	0.0088	Yes	100 = 101 101 ≠ 102
		101	4	0	0.0922	0.321	0.22	0.12				
		102	8	13	ND	0.75	0.61	0.12				
	ON	100	4	0	0.185	0.5	0.34	0.15	WRS	0.3123	N/A	100 = 101
		101	4	0	0.204	0.226	0.21	0.01				
1,2-Dichloroethane	OFF	100	4	0	2.88	4.56	3.58	0.71	Kruskal-Wallis	0.0074	Yes	100 ≠ 101 101 ≠ 102
		101	4	25	ND	0.105	0.09	0.02				
		102	8	0	1.6	4.58	2.86	0.92				
	ON	100	4	0	1.85	6.42	3.96	2.21	WRS	0.0265	N/A	100 ≠ 101
		101	4	75	ND	0.0806	0.08	N/A				
Benzene	OFF	100	4	25	ND	0.679	0.60	0.08	Kruskal-Wallis	0.0026	Yes	100 = 101 101 ≠ 102
		101	4	0	0.526	1.32	0.98	0.38				
		102	8	0	0.615	1.57	1.06	0.29				
	ON	100	4	0	0.244	1	0.61	0.377	WRS	0.4705	N/A	100 = 101
		101	4	0	0.526	1.27	0.81	0.348				

ppbv: parts per billion by volume

ND: non-detect

%: percent

WRS: Wilcoxon Rank Sum test

Statistical testing was conducted with alpha=0.05.

For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Gehan's comparisons were performed using ProUCL version 4.0.

Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive statistics are based on detected values only.

* All detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs (continued)

Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Carbon Tetrachloride	OFF	100	4	0	0.0864	0.107	0.10	0.008	Kruskal-Wallis	0.0026	Yes	100 = 101 101 ≠ 102
		101	4	0	0.0722	0.0916	0.08	0.009				
		102	8	0	0.114	0.126	0.12	0.004				
	ON	100	4	0	0.0777	0.0998	0.09	0.009	WRS	0.4705	N/A	100 = 101
		101	4	25	ND	0.092	0.09	0.002				
Cyclohexane	OFF	100	4	50	ND	0.136	0.12	0.02	Gehan's	1.981 1.994	N/A	100 ≠ 101 101 ≠ 102
		101	4	0	0.208	0.584	0.41	0.17				
		102	8	25	ND	0.116	0.09	0.02				
	ON	100	4	25	ND	0.155	0.13	0.05	WRS	0.0294	N/A	100 ≠ 101
		101	4	0	0.168	0.595	0.34	0.21				
Trichloroethene	OFF	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101 101 vs 102: Can't run comparison ; greater than 80% NDs.
		101	4	100	ND	ND	N/A	N/A				
		102	8	88	ND	0.184	N/A	N/A				
	ON	100	4	75	ND	0.12	0.12	N/A	WRS	0.4533	N/A	100 = 101
		101	4	100	ND	ND	N/A	N/A				
Heptane	OFF	100	4	50	ND	0.224	0.20	0.03	Kruskal-Wallis	0.0029	Yes	100 ≠ 101 101 =102
		101	4	0	0.326	0.864	0.63	0.24				
		102	8	0	0.229	0.365	0.30	0.04				
	ON	100	4	0	0.0737	0.249	0.16	0.09	WRS	0.0304	N/A	100 ≠ 101
		101	4	0	0.259	0.843	0.51	0.29				
Methyl Isobutyl Ketone	OFF	100	4	0	0.219	0.331	0.28	0.05	Kruskal-Wallis	0.3675	N/A	100 = 101 = 102
		101	4	0	0.134	0.316	0.24	0.08				
		102	8	0	0.215	0.558	0.38	0.15				
	ON	100	4	0	0.123	0.288	0.21	0.09	WRS	1	N/A	100 = 101
		101	4	0	0.157	0.21	0.18	0.03				
Toluene	OFF	100	4	50	ND	2.96	2.89	0.11	Kruskal-Wallis	0.003	Yes	100 = 101 101 ≠ 102
		101	4	0	2.07	4.58	3.62	1.21				
		102	8	0	1.1	1.83	1.43	0.25				
	ON	100	4	0	1.2	3.95	2.58	1.42	WRS	0.665	N/A	100 =101
		101	4	0	1.84	4.31	2.79	1.15				

ppbv: parts per billion by volume

ND: non-detect

%: percent

WRS: Wilcoxon Rank Sum test

Statistical testing was conducted with alpha=0.05.

For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Gehan's comparisons were performed using ProUCL version 4.0.

Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive statistics are based on detected values only.

* All detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs (continued)

Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
2-Hexanone	OFF	100	4	0	0.176	0.521	0.29	0.16	Kruskal-Wallis	0.0876	N/A	100 = 101 = 102
		101	4	25	ND	0.433	0.36	0.08				
		102	8	0	0.281	0.661	0.47	0.13				
	ON	100	4	0	0.091	0.278	0.19	0.10	WRS	0.8852	N/A	100 = 101
		101	4	25	ND	0.275	0.22	0.05				
Tetrachloroethene	OFF	100	4	0	0.12	0.174	0.14	0.02	Kruskal-Wallis	0.0653	N/A	100 = 101 = 102
		101	4	75	ND	0.0678	0.07	N/A				
		102	8	50	0.096	0.398	0.21	0.14				
	ON	100	4	0	0.071	0.216	0.15	0.08	WRS	0.02	N/A	100 ≠ 101
		101	4	100	ND	ND	N/A	N/A				
Ethylbenzene	OFF	100	4	25	ND	0.63	0.53	0.10	Kruskal-Wallis	0.0339	Yes	100 ≠ 101 101 =102
		101	4	0	0.547	1.26	0.96	0.32				
		102	8	0	0.478	0.921	0.66	0.16				
	ON	100	4	0	0.24	0.669	0.47	0.23	WRS	0.3123	N/A	100 = 101
		101	4	0	0.568	1.01	0.74	0.21				
m&p-Xylene	OFF	100	4	0	1.15	2.82	1.68	0.77	Kruskal-Wallis	0.5512	N/A	100 = 101 =102
		101	4	0	1.26	1.6	1.38	0.16				
		102	8	13	ND	3.1	1.88	0.61				
	ON	100	4	0	0.618	1.64	1.16	0.54	WRS	0.3123	N/A	100 = 101
		101	4	0	1.32	2.44	1.76	0.53				
Bromoform	OFF	100	4	0	0.16	0.192	0.18	0.02	Kruskal-Wallis	0.0007	N/A	100 ≠ 101 101 =102
		101	4	100	ND	ND	N/A	N/A				
		102	8	100	ND	ND	N/A	N/A				
	ON	100	4	25	ND	0.162	0.13	0.05	WRS	0.0689	N/A	100 = 101
		101	4	100	ND	ND	N/A	N/A				
Styrene	OFF	100	4	0	0.369	0.611	0.49	0.11	Kruskal-Wallis	0.004	Yes	100 = 101 101 = 102
		101	4	0	0.477	1.09	0.77	0.28				
		102	8	0	1.02	1.79	1.29	0.27				
	ON	100	4	0	0.253	0.703	0.49	0.23	WRS	0.4705	N/A	100 =101
		101	4	0	0.546	0.753	0.64	0.10				

ppbv: parts per billion by volume

ND: non-detect

%: percent

WRS: Wilcoxon Rank Sum test

Statistical testing was conducted with alpha=0.05.

For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Gehan's comparisons were performed using ProUCL version 4.0.

Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive statistics are based on detected values only.

* All detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Florida - VOCs

Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
1,1,2,2-Tetrachloroethane	OFF	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101 =102
		101	4	100	ND	ND	N/A	N/A				
		102	8	100	ND	ND	N/A	N/A				
	ON	100	4	100	ND	ND	N/A	N/A	N/A	N/A	N/A	100 = 101
		101	4	100	ND	ND	N/A	N/A				
o-Xylene	OFF	100	4	50	ND	0.666	0.61	0.08	Kruskal-Wallis	0.0363	Yes	100 = 101 101 ≠ 102
		101	4	0	0.574	1.24	0.95	0.29				
		102	8	0	0.385	0.68	0.50	0.11				
	ON	100	4	0	0.278	0.688	0.50	0.22	WRS	0.346	N/A	100 = 101
		101	4	0	0.548	0.954	0.71	0.19				
Ethyltoluene	OFF	100	4	0	0.197	0.3	0.24	0.05	Kruskal-Wallis	0.001	Yes	100 = 101 101 ≠ 102
		101	4	0	0.228	0.49	0.37	0.11				
		102	8	100	ND	ND	N/A	N/A				
	ON	100	4	0	0.114	0.286	0.20	0.09	WRS	0.4705	N/A	100 = 101
		101	4	0	0.218	0.337	0.27	0.06				
1,3,5-trimethylbenzene	OFF	100	4	0	0.20	0.261	0.23	0.03	Kruskal-Wallis	0.0021	Yes	100 = 101 101 ≠ 102
		101	4	0	0.243	0.489	0.37	0.11				
		102	8	0	0.0866	0.111	0.10	0.01				
	ON	100	4	0	0.119	0.259	0.19	0.07	WRS	0.3123	N/A	100 = 101
		101	4	0	0.221	0.353	0.27	0.06				
1,2,4-Trimethylbenzene	OFF	100	4	0	0.897	1.24	1.08	0.14	Kruskal-Wallis	0.0032	Yes	100 = 101 101 ≠ 102
		101	4	0	0.85	1.71	1.29	0.37				
		102	8	0	0.224	0.306	0.26	0.03				
	ON	100	4	0	0.544	1.16	0.87	0.33	WRS	0.7715	N/A	100 = 101
		101	4	0	0.772	1.16	0.93	0.18				

ppbv: parts per billion by volume

ND: non-detect

%: percent

WRS: Wilcoxon Rank Sum test

Statistical testing was conducted with alpha=0.05.

For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Gehan's comparisons were performed using ProUCL version 4.0.

Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive statistics are based on detected values only.

* All detected values are below the greatest reporting limit.

Descriptive Statistics for Outdoor Air Sampling Events in Florida - VOCs
Analytical Method: EPA TO-15

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)
Dichlorodifluoromethane	100	4	0	0.407	0.516
	101	4	0	0.332	0.408
	102	4	0	0.438	0.504
Chloromethane	100	4	0	0.493	0.7
	101	4	0	0.436	0.606
	102	4	0	0.659	0.931
Acetone	100	4	25	ND	3.45
	101	4	0	1.21	2.31
	102	4	25	ND	6.90
Trichlorofluoromethane	100	4	0	0.218	0.265
	101	4	0	0.155	0.218
	102	4	0	0.285	0.33
Isopropyl Alcohol	100	4	25	ND	0.616
	101	4	0	0.107	0.895
	102	4	0	0.192	0.48
Methylene Chloride	100	4	100	ND	ND
	101	4	75	ND	0.098
	102	4	0	0.0773	0.09
Trichlorotrifluoroethane	100	4	0	0.0754	0.092
	101	4	25	ND	0.103
	102	4	0	0.0881	0.106
trans-1,2-Dichloroethene	100	4	100	ND	ND
	101	4	75	ND	0.091
	102	4	100	ND	ND
Vinyl Acetate	100	4	25	ND	0.538
	101	4	25	ND	0.61
	102	4	0	0.335	0.407
2-Butanone	100	4	25	ND	0.386
	101	4	0	0.24	0.743
	102	4	25	ND	0.634
cis-1,2-Dichloroethene	100	4	100	ND	ND
	101	4	75	ND	0.072
	102	4	100	ND	ND
Ethyl Acetate	100	4	75	ND	0.19
	101	4	75	ND	0.166
	102	4	75	ND	0.096
Hexane	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	25	ND	0.167
Chloroform	100	4	0	0.0781	1.46
	101	4	100	ND	ND
	102	4	50	ND	0.103
Tetrahydrofuran	100	4	100	ND	ND
	101	4	75	ND	0.266
	102	4	75	ND	0.172
1,2-Dichloroethane	100	4	100	ND	ND
	101	4	25	ND	0.269
	102	4	100	ND	ND
Benzene	100	4	100	ND	ND
	101	4	50	ND	0.0961
	102	4	0	0.0723	0.281

ppbv: parts per billion by volume
ND: non-detect
%: percent
Note: Sample 3930158-Unit 100 - Night 2 was originally recorded as Location 4A but was changed to Location 3 for these summary statistics.

Descriptive Statistics for Outdoor Air Sampling Events in Florida - VOCs
Analytical Method: EPA TO-15

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)
Carbon Tetrachloride	100	4	0	0.074	0.0873
	101	4	0	0.0676	0.0891
	102	4	0	0.091	0.103
Heptane	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	50	ND	0.114
Methyl Isobutyl Ketone	100	4	100	ND	ND
	101	4	75	ND	0.506
	102	4	75	ND	0.1667
trans-1,3-Dichloropropene	100	4	100	ND	ND
	101	4	100	ND	ND
	102	4	100	ND	ND
Toluene	100	4	25	ND	0.139
	101	4	25	ND	0.21
	102	4	50	ND	0.519
2-Hexanone	100	4	100	ND	ND
	101	4	75	ND	0.197
	102	4	75	ND	0.209
Ethylbenzene	100	4	100	ND	ND
	101	4	75	ND	0.082
	102	4	75	ND	0.086
m&p-Xylene	100	4	50	ND	0.0718
	101	4	50	ND	0.172
	102	4	25	ND	0.228
Styrene	100	4	100	ND	ND
	101	4	75	ND	0.149
	102	4	100	ND	ND
1,1,2,2-Tetrachloroethane	100	4	100	ND	ND
	101	4	75	ND	0.094
	102	4	100	ND	ND
o-Xylene	100	4	100	ND	ND
	101	4	75	ND	0.077
	102	4	75	ND	0.0879
Ethyltoluene	100	4	100	ND	ND
	101	4	75	ND	0.114
	102	4	100	ND	ND
1,2,4-Trimethylbenzene	100	4	100	ND	ND
	101	4	75	ND	0.122
	102	4	75	ND	0.133
1,3-Dichlorobenzene	100	4	100	ND	ND
	101	4	75	ND	0.21
	102	4	100	ND	ND
1,4-Dichlorobenzene	100	4	100	ND	ND
	101	4	75	ND	0.282
	102	4	100	ND	ND
1,2-Dichlorobenzene	100	4	100	ND	ND
	101	4	75	ND	0.244
	102	4	100	ND	ND

ppbv: parts per billion by volume
ND: non-detect
%: percent
Note: Sample 3930158-Unit 100 - Night 2 was originally recorded as Location 4A but was changed to Location 3 for these summary statistics.

Summary of Indoor Air Sampling Events in Florida: Carbon Tube TICS (VOCs)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 100					Unit: 101					Unit: 102					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
3.317	Dichloroethane Isomer	8	8	5.83	12.5	8.51	8	0	0	0	0	16	1	11.7	11.7	0.49	0.0018	Yes	100 ≠ 101 101 = 102
3.83	Unknown Alkane	8	4	1.67	2.08	0.94	8	0	0	0	0	16	0	0	0	0	0.0059	Yes	100 = 101 101 = 102
3.825	Unknown	8	1	1.67	1.67	0.14	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
3.959	Pentanal	8	6	3.33	6.67	4.10	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
5.467	Hexanal	8	8	14.6	25.4	20.50	8	8	23.8	42.5	35.67	16	16	35.8	73.7	55.43	0.0036	Yes	100 = 101 101 = 102
5.66	Acetic Acid, butyl ester	8	3	4.17	5.83	1.215	8	0	0	0	0	16	1	11.7	11.7	1.67	0.2707	No	100 = 101 = 102
5.79	Alkane	8	1	2.08	2.08	0.17	8	0	0	0	0	16	0	0	0	0	0.2528	No	100 = 101 = 102
6.08 -6.521	Unknown	8	1	2.08	2.08	0.52	8	0	0	0	0	16	0	0	0	0	0.2528	No	100 = 101 = 102
6.724- 6.73	2- Heptanone Isomer	8	1	4.17	4.17	1.04	8	0	0	0	0	16	0	0	0	0	0.2528	No	100 = 101 = 102
6.938	Butoxy Ethanol Isomer	8	4	2.08	2.5	1.15	8	0	0	0	0	16	0	0	0	0	0.0525	No	100 = 101 = 102
7.409	Pinene Isomer	8	8	49.6	80	62.28	8	8	112	156	138.00	16	16	392	669	540.75	0.0017	Yes	100 = 101 101 = 102
7.605	Camphene	8	2	2.08	2.5	0.38	8	0	0	0	0	16	1	8.33	8.33	0.35	0.6232	No	100 = 101 = 102
7.41 - 7.628	Unknown	8	6	2.5	3.75	2.36	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
7.665	Unknown Alkane	8	8	7.5	8.75	8.20	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
7.711	Alkyl Benzene	8	0	0	0	0.00	8	1	15	15	1.25	16	0	0	0	0	0.2231	No	100 = 101 = 102
7.711	Benzaldehyde/Unknown	8	0	0	0	0	8	0	0	0	0	16	16	8.33	18.9	13.09	0.0016	Yes	100 = 101 101 ≠ 102
7.725	Alkyl Benzene	8	0	0	0	0	8	7	10.4	15.4	12.63	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 ≠ 102
7.73 -7.82	Methylethylbenzene Isomer	8	8	7.92	11.7	9.69	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
7.901	Unknown	8	2	1.67	2.5	0.63	8	0	0	0	0	16	0	0	0	0	0.0408	Yes	100 = 101 101 = 102

µg/m3: micrograms per cubic meter
N: number of samples analyzed
**Averages were computed using zero in place of compounds not-detected.
Kruskal-Wallis Tests were computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Florida: Carbon Tube TICS (VOCs) (continued)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 100					Unit: 101					Unit: 102					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
7.97 -7.98	Pinene Isomer	8	0	0	0	0	8	1	30	30	2.50	16	16	54.6	103	79.90	0.0020	Yes	100 = 101 101 ≠ 102
7.976	Pinene Isomer	8	8	18.8	25	21.33	8	7	22.9	34.2	27.58	16	0	0	0	0	0.0013	Yes	100 = 101 101 ≠ 102
8.02 - 8.05	2-Pentyl Furan	8	8	2.5	4.58	3.58	8	7	6.67	8.75	7.26	16	16	10.8	22.4	16.60	0.0017	Yes	100 = 101 101 = 102
8.14 - 8.16	Octanal	8	1	19.2	19.2	1.60	8	0	0	0	0	16	10	13.8	28.5	12.86	0.0347	Yes	100 = 101 101 = 102
8.423	Ethylhexanol Isomer	8	0	0	0	0	8	1	12.1	12.1	1.01	16	16	8.33	17.1	12.10	0.0019	Yes	100 = 101 101 = 102
8.44 - 8.45	Ethylhexanol Isomer	8	8	2.92	4.58	3.96	8	7	7.92	11.7	8.75	16	0	0	0	0	0.0007	Yes	100 = 101 101 ≠ 102
8.48 - 8.50	Methylethylbenzene Isomer	8	0	0	0	0	8	5	5.83	7.08	3.71	16	0	0	0	0	0.0059	Yes	100 = 101 101 = 102
8.505	Methyl- methylethylbenzene Isomer	8	8	15.8	19.2	17.50	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
8.623	Trimethyl-, Oxabicyclooctane Isomer	8	8	4.58	5.83	5.28	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
8.794	Alkene	8	0	0	0	0	8	0	0	0	0	16	3	10	12.7	2.48	0.3442	No	100 = 101 = 102
8.62 - 8.82	Unknown	8	2	2.5	3.75	0.52	8	1	5.83	5.83	0.49	16	0	0	0	0	0.1462	No	100 = 101 = 102
8.81 - 8.821	Alkane/C10 Benzene Isomer	8	1	3.75	3.75	0.31	8	4	6.25	6.67	3.16	16	0	0	0	0	0.0157	Yes	100 = 101 101 = 102
8.821	Unknown Alkane	8	1	2.08	2.08	0.17	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
8.965	C-10 Alcohol	8	8	3.33	4.58	3.92	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
9.58	Tetramethylbenzene Isomer	8	1	2.08	2.08	0.17	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
9.58	Dimethylethylbenzene Isomer	8	1	1.67	1.67	0.42	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
9.634	Tetramethylbenzene/C10 Benzene Isomer	8	3	1.67	2.08	0.76	8	0	0	0	0	16	0	0	0	0	0.0408	Yes	100 = 101 101 = 102
10.014	Acetic acid, Phenylmethyl ester	8	8	4.58	7.5	5.83	8	3	4.17	5	1.15	16	3	9.58	11.8	3.87	0.2512	No	100 = 101 = 102
10.548	Organic Acid	8	1	6.25	6.25	1.56	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102

µg/m3: micrograms per cubic meter
N: number of samples analyzed
**Averages were computed using zero in place of compounds not-detected.
Kruskal-Wallis Tests were computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Florida: Carbon Tube TICS (VOCs)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 100					Unit: 101					Unit: 102					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
10.778	Unknown	8	7	2.08	3.33	2.29	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
10.778	Unknown Alcohol	8	1	2.92	2.92	0.24	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
11.19	Bornyl Acetate	8	8	2.5	5.42	3.51	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
11.211	Unknown Alcohol	8	3	5.42	6.25	2.36	8	0	0	0	0	16	0	0	0	0	0.0408	Yes	100 = 101 101 = 102
11.212	Unknown	8	5	3.75	5.42	2.54	8	0	0	0	0	16	0	0	0	0	0.0059	Yes	100 = 101 101 = 102
11.70 - 11.71	Organic Acid	8	0	0	0	0	8	0	0	0	0	16	16	26.3	88.2	53.79	0.0016	Yes	100 = 101 101 ≠ 102
11.712	Unknown	8	0	0	0	0	8	8	6.25	14.6	11.18	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 ≠ 102
11.72	Organic Acid	8	8	2.92	4.17	3.51	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
11.826	Unknown	8	2	1.67	2.08	0.31	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
11.827	Unknown Alcohol	8	4	1.67	2.5	1.46	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
11.826	Tert-butylcyclohexyl Acetate Isomer	8	2	2.5	2.5	0.42	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
11.84 - 11.86	Organic Acid	8	8	5	7.08	5.90	8	7	10.4	20.8	15.38	16	1	91.7	91.7	11.46	0.0145	Yes	100 = 101 101 ≠ 102
12.17	Diphenyl ether	8	2	2.08	2.08	0.35	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
12.33	Organic Acid	8	1	3.75	3.75	0.31	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
12.33	Unknown Alcohol	8	1	3.33	3.33	0.28	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
12.34	Dechahydro Methanoazulene Isomer	8	1	4.17	4.17	1.04	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102
12.34 - 12.36	Unknown	8	5	2.92	3.75	1.94	8	5	4.58	7.08	2.33	16	0	0	0	0	0.0377	Yes	100 = 101 101 = 102
12.42 - 12.43	Hexamethyloctahydro-1H-indene Isomer	8	0	0	0	0	8	8	6.25	10.8	8.64	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 ≠ 102
12.65 - 12.68	Unknown	8	2	1.67	1.67	0.28	8	8	4.58	6.67	5.66	16	0	0	0	0	0.0016	Yes	100 = 101 101 ≠ 102
12.74 - 13.62	Organic Acid	8	1	2.08	2.08	0.17	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 = 101 = 102

µg/m3: micrograms per cubic meter
N: number of samples analyzed
**Averages were computed using zero in place of compounds not-detected.
Kruskal-Wallis Tests were computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Florida: Carbon Tube TICS (VOCs)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: ON

		Unit: 100					Unit: 101					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Conclusion
3.317	Dichloroethane Isomer	7	6	4.58	8.33	4.25	8	0	0	0	0	0.0689	100 = 101
3.525	Unknown	7	1	0.42	0.42	0.11	8	0	0	0	0	0.4533	100 = 101
3.825	Unknown	7	1	1.25	1.25	0.16	8	0	0	0	0	0.4533	100 = 101
3.836	Trimethyl pentane Isomer	7	4	1.67	1.67	0.84	8	0	0	0	0	0.1814	100 = 101
3.959	Pentanal	7	6	2.5	5	2.24	8	0	0	0	0	0.0668	100 = 101
5.467	Hexanal	7	6	10	16.7	8.97	8	8	23.8	29.2	25.09	0.0304	100 ≠ 101
5.66	Acetic Acid, butyl ester	7	5	2.08	3.75	1.54	8	0	0	0	0	0.0689	100 = 101
6.724- 6.73	2- Heptanone Isomer	7	3	1.25	1.67	0.73	8	0	0	0	0	0.1859	100 = 101
7.409	Pinene Isomer	7	6	34.2	51.7	29.55	8	8	111	127	119.33	0.0304	100 ≠ 101
7.41 - 7.628	Unknown	7	2	1.67	1.67	0.42	8	0	0	0	0	0.4533	100 = 101
7.63	C9 Benzene Isomer	7	2	1.67	1.67	0.56	8	0	0	0	0	0.1859	100 = 101
7.665	Unknown Alkane	7	6	2.08	4.58	2.27	8	0	0	0	0	0.689	100 = 101
7.711	Alkyl Benzene	7	0	0	0	0.00	8	1	7.5	7.5	0.63	0.4533	100 = 101
7.725	Alkyl Benzene	7	0	0	0	0.00	8	3	5.83	8.75	3.23	0.0689	100 = 101
7.73 -7.82	Methylethylbenzene Isomer	7	6	4.58	7.92	4.69	8	2	7.08	7.08	2.36	0.4596	100 = 101
7.97 -7.98	Pinene Isomer	7	0	0	0	0.00	8	1	22.9	22.9	1.91	0.4533	100 = 101
7.97	Unknown	7	1	0.42	0.42	0.11	8	0	0	0	0	0.4533	100 = 101
7.976	Pinene Isomer	7	6	11.3	17.1	9.96	8	7	21.7	24.6	21.38	0.0606	100 = 101
8.02 - 8.05	2-Pentyl Furan	7	6	1.67	2.5	1.68	8	6	5.83	6.67	5.17	0.0671	100 = 101
8.14 - 8.16	Octanal	7	5	9.17	14.2	6.46	8	0	0	0	0	0.0689	100 = 101
8.44 - 8.45	Ethylhexanol Isomer	7	6	2.08	2.92	1.86	8	3	5.83	7.5	2.64	0.8824	100 = 101
8.505	Methyl- methylethylbenzene Isomer	7	6	7.92	13.3	7.21	8	0	0	0	0	0.0689	100 = 101
8.623	Trimethyl-, Oxabicyclooctane Isomer	7	5	2.5	4.17	2.17	8	0	0	0	0	0.0689	100 = 101
8.62 - 8.82	Unknown	7	1	2.5	2.5	0.21	8	0	0	0	0	0.4533	100 = 101
8.965	C-10 Alcohol	7	6	2.08	3.33	1.86	8	0	0	0	0	0.0689	100 = 101
9.259	Unknown Alkane	7	2	2.08	2.5	0.38	8	0	0	0	0	0.4533	100 = 101
9.714	Unknown	7	0	0	0	0.00	8	1	137	137	34.25	0.4533	100 = 101
9.73	Unknown	7	1	0.42	0.42	0.105	8	0	0	0	0	0.4533	100 = 101
10.014	Acetic acid, Phenylmethyl ester	7	6	2.92	4.58	2.55	8	0	0	0	0	0.0668	100 = 101
10.302	Unkown Alkane	7	3	1.67	1.67	0.70	8	0	0	0	0	0.1859	100 = 101
10.778	Unknown	7	3	1.25	2.08	0.62	8	0	0	0	0	0.1859	100 = 101
11.19	Unknown	7	1	2.08	2.08	0.17	8	0	0	0	0	0.4533	100 = 101
11.19	Isobornyl Acetate	7	3	2.08	2.5	1.145	8	0	0	0	0	0.1859	100 = 101
11.19	Trimethylbicycloheptanol acetate Isomer	7	1	2.08	2.08	0.17	8	0	0	0	0	0.4533	100 = 101
11.19	Unknown	7	1	2.08	2.08	0.17	8	0	0	0	0	0.4533	100 = 101
11.211	Unknown Alcohol	7	3	2.5	3.75	1.15	8	0	0	0	0	0.1859	100 = 101
11.212	Unknown	7	4	1.67	2.92	1.63	8	0	0	0	0	0.0689	100 = 101
11.217	Alkane	7	1	10.8	10.8	0.9	8	0	0	0	0	0.4533	100 = 101
11.712	Unknown	7	0	0	0	0	8	8	4.58	7.08	5.45	0.0211	100 ≠ 101
11.72	Organic Acid	7	6	1.67	2.5	1.58	8	0	0	0	0	0.0689	100 = 101
11.827	Unknown Alcohol	7	4	1.25	1.67	0.66	8	0	0	0	0	0.1859	100 = 101
11.84 - 11.86	Organic Acid	7	6	3.33	4.58	2.97	8	7	7.5	11.3	7.78	0.0294	100 = 101
12.34	Dechahydro Methanoazulene Isomer	7	3	2.08	2.5	1.11	8	0	0	0	0	0.0689	100 = 101
12.34 - 12.36	Unknown	7	3	2.08	2.08	0.61	8	0	0	0	0	0.1859	100 = 101
12.42 - 12.43	Hexamethyloctahydro-1H-indene Isomer	7	0	0	0	0	8	8	4.58	6.25	5.10	0.0202	100 ≠ 101
12.65 - 12.68	Unknown	7	1	0.83	0.83	0.21	8	4	4.17	5	1.56	0.4084	100 = 101
12.74 - 13.62	Organic Acid	7	0	0	0	0	8	1	5	5	0.42	0.4533	100 = 101

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 100 to Unit 101.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Outdoor Air Sampling Events in Florida: Carbon Tube TICS

Analytical Method: NIOSH 1500, 1501 & 1003

		Unit: 100			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)
3.317	Dichloroethane Isomer	3	1	7.14	7.14
3.525	Unknown	3	2	0.83	0.83
3.825	Unknown	3	1	1.59	1.59
3.959	Pentanal	3	1	3.17	3.17
5.044	Alkyl Benzene	3	1	0.83	0.83
5.467	Hexanal	3	1	13.1	13.1
6.08 -6.521	Unknown	3	2	0.42	0.42
6.729	Unknown	3	1	1.59	1.59
7.409	Pinene Isomer	3	1	44	44
7.41 - 7.628	Unknown	3	1	0.42	0.42
7.63	C9 Benzene Isomer	3	1	1.98	1.98
7.665	Unknown Alkane	3	1	3.97	3.97
7.73 -7.82	Methylethylbenzene Isomer	3	1	7.14	7.14
7.976	Pinene Isomer	3	1	15.1	15.1
8.02 - 8.05	2-Pentyl Furan	3	1	2.78	2.78
8.44 - 8.45	Ethylhexanol Isomer	3	1	2.78	2.78
8.505	Methyl- methylethylbenzene Isomer	3	1	11.1	11.1
8.623	Trimethyl-, Oxabicyclooctane Isomer	3	1	3.57	3.57
8.965	C-10 Alcohol	3	1	2.78	2.78
9.58	Dimethylethylbenzene Isomer	3	1	1.19	1.19
10.014	Acetic acid, Phenylmethyl ester	3	1	3.57	3.57
10.778	Unknown	3	1	1.59	1.59
11.19	Unknown	3	1	1.98	1.98
11.212	Unknown	3	2	0.83	3.17
11.72	Organic Acid	3	1	2.38	2.38
11.826	Unknown	3	1	1.59	1.59
11.84 - 11.86	Organic Acid	3	1	4.37	4.37
12.34 - 12.36	Unknown	3	1	1.98	1.98
12.65 - 12.68	Unknown	3	2	0.42	0.42
15.42	Unknown	3	1	2.5	2.5

µg/m3: micrograms per cubic meter

N: number of samples analyzed

Unit 101: 4 samples were collected resulting in no detects.

Unit 102: 3 samples were collected resulting in no detects.

Summary of Indoor Air Sampling Event in Florida: EPA TO 15 TICS
Air Conditioning: ON

		Unit: 100					Unit: 101					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	WRS Probability Value	Conclusion
4.38 - 4.83	Acetaldehyde	4	2	1.15	1.48	0.66	4	3	0.512	0.693	0.463	0.8824	100 = 101
4.4	1,1-Difluoroethane	4	2	2.77	3.35	1.53	4	0	0	0	0.00	0.1859	100 = 101
4.49 - 4.56	Unknown	4	3	0.731	0.931	0.64	4	0	0	0	0	0.0689	100 = 101
4.82 - 4.84	Unknown alkane	4	2	4.23	4.71	2.235	4	0	0	0	0	0.0929	100 = 101
5.28 - 5.79	Acetonitrile	4	1	4.22	4.22	1.06	4	4	2.52	6.28	4.768	0.1038	100 = 101
5.55 - 5.58	Ethanol	4	4	5.27	7.37	6.40	4	4	2.01	3.03	2.378	0.0304	100 ≠ 101
5.76 - 5.79	Unknown	4	3	3.31	3.98	2.68	4	0	0	0	0.00	0.0689	100 = 101
5.93 - 6.49	Pentane	4	4	2.39	4.29	3.36	4	4	0.654	1.32	0.859	0.0304	100 ≠ 101
6.56 - 6.59	2-Methyl -1,3 -Butadiene Isomer	4	4	0.769	1.09	0.91	4	4	0.559	1.64	1.14	0.665	100 = 101
7.44 - 8.03	Butanal	4	2	0.348	0.36	0.177	4	2	0.484	0.568	0.26	0.6446	100 = 101
7.87 - -7.89	1-Pentene	4	1	2.25	2.25	0.56	4	0	0	0	0	0.4533	100 = 101
7.87 - 7.89	Unknown alkene	4	1	1.48	1.48	0.37	4	0	0	0	0	0.4533	100 = 101
7.88	Pentene	4	2	1.41	1.72	0.78	4	0	0	0	0	0.1859	100 = 101
7.94 - 7.95	2-methyl pentane	4	0	0	0	0	4	4	0.718	1.6	1.10	0.0211	100 ≠ 101
8.29 - 8.30	3-methyl pentane	4	0	0	0	0	4	4	0.418	0.929	0.64	0.0211	100 ≠ 101
9.43 - 9.44	Methyl cyclopentane	4	0	0	0	0	4	3	0.494	0.893	0.47	0.0689	100 = 101
9.9	Butanol Isomer	4	4	0.652	1.78	1.18	4	4	0.523	0.721	0.63	0.1124	100 = 101
9.96 - 10.6	Pentanal	4	4	0.7	1.87	1.27	4	4	1.49	1.93	1.69	0.4705	100 = 101
10.38 -10.39	2-methyl-hexane	4	0	0	0	0	4	2	0.631	0.795	0.36	0.1859	100 = 101
10.98	C8H18 Alkane	4	0	0	0	0	4	2	0.774	1.04	0.45	0.1859	100 = 101
12.39 - 12.4	Pentanol Isomer	4	3	0.273	0.667	0.39	4	4	0.544	0.858	0.71	0.1939	100 = 101
12.41 - 13.08	Hexanal	4	4	2.93	6.96	4.98	4	4	5.44	6.36	5.83	1	100 = 101
13.42 - 13.43	Butyl ester acetic acid	4	4	0.246	0.877	0.56	4	0	0	0	0	0.0211	100 ≠ 101
14.38 - 15.04	2-Heptanone	4	0	0	0	0	4	4	0.377	0.523	0.45	0.0211	100 ≠ 101
15.28 - 16.54	Heptanal	4	4	0.523	1.34	0.92	4	4	0.834	1.09	0.98	1	100 = 101
16.54 - 16.55	Alpha pinene	4	4	4.81	11.4	8.06	4	4	15	17.2	16.225	0.0304	100 ≠ 101
16.58 - 17.27	Octanal	4	4	1.16	4.14	2.69	4	4	1.91	3.11	2.59	1	100 = 101
16.79 - 17.80	Ethyl methyl benzene isomer	4	4	0.364	0.947	0.668	4	4	0.66	0.946	0.772	0.4426	100 = 101
17.2 - 17.99	delta carene isomer	4	4	0.625	1.05	0.84	4	4	1.06	1.17	1.103	0.0304	100 ≠ 101
17.37	Beta pinene	4	4	0.706	2.21	1.50	4	4	2.42	2.84	2.628	0.0304	100 ≠ 101
17.54	Decane	4	3	0.236	0.552	0.27	4	4	0.506	0.545	0.524	0.3123	100 = 101
17.8	Ethyl hexanol Isomer	4	0	0	0	0	4	2	0.421	0.773	0.30	0.1859	100 = 101
17.99 - 18.19	Limonene Isomer	4	4	4.71	11.2	7.618	4	4	2.75	2.8	2.77	0.0294	100 ≠ 101
17.99	Isopropyl Toluene	4	4	1.27	2.33	1.793	4	4	0.862	0.954	0.90	0.0304	100 ≠ 101
18.23	Phellandrene	4	0	0	0	0	4	4	0.525	1.03	0.727	0.0211	100 ≠ 101
18.24 - 18.40	Unknown alkane	4	1	1.36	1.36	0.34	4	0	0	0	0	0.4533	100 = 101
18.24	Eucalyptol	4	3	0.485	1.16	0.60	4	0	0	0	0	0.0689	100 = 101
18.38 - 19.07	Nonanal	4	4	1.38	4.77	2.818	4	4	1.34	2.87	2.258	0.6650	100 = 101
18.4	Dimethyl Undecane Isomer	4	2	0.226	0.523	0.187	4	0	0	0	0	0.1859	100 = 101
18.54	Diethyl benzene isomer	4	0	0	0	0	4	1	0.356	0.356	0.09	0.4533	100 = 101
18.58 - 19.27	Undecane	4	2	0.244	0.303	0.14	4	4	0.631	0.703	0.670	0.0294	100 ≠ 101
18.63 - 18.80	Unknown alkane	4	1	0.257	0.257	0.06	4	0	0	0	0	0.4533	100 = 101
18.63	Terpinene isomer + C13H28 Alkanes	4	1	0.25	0.25	0.06	4	0	0	0	0	0.4533	100 = 101
18.8 -21.46	Unknown	4	1	0.278	0.278	0.07	4	0	0	0	0	0.4533	100 = 101
18.8	Dimethyl Cyclohexene Isomer	4	2	0.411	0.553	0.241	4	0	0	0	0	0.1859	100 = 101
20.03 - 20.74	methoxy propenyl benzene isomer	4	0	0	0	0	4	4	0.51	0.898	0.73	0.0211	100 ≠ 101
20.74	1-Methoxy-4-(2-Propenyl) Benzene	4	3	0.361	1.3	0.60	4	0	0	0	0	0.0689	100 = 101
20.86 - 20.87	Naphthalene	4	4	0.507	0.874	0.68	4	2	0.424	0.513	0.234	0.0591	100 = 101

N: number of samples analyzed
WRS: Wilcoxon-Rank-Sum test
**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 100 to Unit 101.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Indoor Air Sampling Events: EPA TO 15 TICS
Air Conditioning: OFF

		Unit: 100					Unit: 101					Unit: 102					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	Kruskal-Wallis Probability Value	Follow-up Multiple Comparisons?	Conclusions
18.4	Dimethyl Undecane Isomer	4	4	0.459	0.642	0.53	4	0	0	0	0	8	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
18.46	Acetophenone	4	0	0	0	0	4	1	0.77	0.77	0.19	8	0	0	0	0	0.2231	No	100 = 101 = 102
18.472	alpha terpinene	4	0	0	0	0	4	0	0	0	0	8	7	0.923	2.23	1.43	0.0052	Yes	100 = 101 101 ≠ 102
18.58 - 19.27	Undecane	4	1	0.391	0.391	0.10	4	4	0.537	1.14	0.80	8	8	1.12	2.27	1.66	0.0022	Yes	100 = 101 101 = 102
18.8 -21.46	Unknown	4	0	0	0	0	4	0	0	0	0	8	1	16.1	16.1	2.01	0.6065	No	100 = 101 = 102
18.8	Dimethyl Cyclohexene Isomer	4	2	0.411	0.506	0.23	4	0	0	0	0	8	0	0	0	0	0.0408	Yes	100 = 101 101 = 102
20.03 - 20.74	methoxy propenyl benzene isomer	4	2	0.616	0.959	0.39	4	4	1.06	1.72	1.37	8	8	0	2.48	1.61	0.0311	Yes	100 = 101 101 = 102
20.26	Dihydro Methyl 1H-Indene Isomer	4	1	0.355	0.355	0.09	4	0	0	0	0	8	0	0	0	0	0.2231	No	100 = 101 = 102
20.74	1-Methoxy-4-(2-Propenyl) Benzene	4	2	0.664	1.01	0.42	4	0	0	0	0	8	0	0	0	0	0.0408	Yes	100 = 101 101 = 102
20.86	Alkane + naphthlene	4	0	0	0	0	4	1	0.532	0.532	0.13	8	0	0	0	0	0.2231	No	100 = 101 = 102
20.86 - 20.87	Naphthalene	4	4	0.648	0.864	0.80	4	3	0.485	0.91	0.54	8	0	0	0	0	0.0038	Yes	100 = 101 101 = 102

ppbv: parts per billion by volume
WRS: Wilcoxon-Rank-Sum test
**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 100 to Unit 101.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the means) were conducted using SigmaStat version 3.01.

Summary of Outdoor Air Sampling Events in Florida: EPA TO 15 TICS

		Unit: 100				Unit: 101				Unit: 102			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)
4.029	Methane, chlorodifluoro	4	0	0	0	4	0	0	0	4	3	0.241	1.03
4.067	unknown	4	0	0	0	4	0	0	0	4	2	0.446	0.532
4.072	Propane	4	0	0	0	4	0	0	0	4	1	0.332	0.332
4.38 - 4.83	Acetaldehyde	4	3	0.264	0.588	4	3	0.339	0.502	4	3	0.888	1.1
4.389	Propane, 2-methyl-	4	0	0	0	4	0	0	0	4	1	1.41	1.41
4.43	Chlorodifluoromethane	4	0	0	0	4	2	0.317	1.57	4	0	0	0
4.48	Unknown alkane	4	0	0	0	4	1	0.202	0.202	4	0	0	0
4.49 - 4.56	Unknown	4	2	0.22	0.237	4	0	0	0	4	2	0.325	0.349
4.64 - 5.11	Butane	4	0	0	0	4	0	0	0	4	3	0.188	0.479
4.82	C4H10 Alkane	4	0	0	0	4	1	0.655	0.655	4	0	0	0
4.83	Methyl alkane	4	1	1.54	1.54	4	0	0	0	4	0	0	0
5.12 - 5.13	Ethanol	4	0	0	0	4	0	0	0	4	3	0.247	0.609
5.28 - 5.79	Acetonitrile	4	1	4.25	4.25	4	0	0	0	4	1	0.215	0.215
5.55 - 5.58	Ethanol	4	3	0.279	6.86	4	2	0.217	0.349	4	0	0	0
5.93 - 6.49	Pentane	4	2	0.192	2.56	4	1	0.171	0.171	4	3	0.225	0.653
6.026	1,2-Pentadiene	4	0	0	0	4	0	0	0	4	1	0.323	0.323
6.026	methyl butadiene isomer	4	0	0	0	4	0	0	0	4	3	0.467	1.65
6.538	Carbon disulfide	4	0	0	0	4	0	0	0	4	1	0.171	0.171
6.56 - 6.59	2-Methyl -1,3 -Butadiene Isomer	4	3	0.37	1.35	4	4	0.546	1.06	4	0	0	0
6.664	unknown	4	0	0	0	4	0	0	0	4	1	1.98	1.98
7.11 - 7.13	Carbon disulfide	4	0	0	0	4	1	0.225	0.225	4	0	0	0
7.44 - 8.03	Butanal	4	3	0.252	0.468	4	4	0.195	0.335	4	1	0.216	0.216
7.88	Pentene	4	1	1.59	1.59	4	0	0	0	4	0	0	0
9.9	Butanol Isomer	4	1	0.815	0.815	4	0	0	0	4	0	0	0
9.96 - 10.6	Pentanal	4	1	0.929	0.929	4	2	0.186	0.19	4	1	0.187	0.187
11.14 - 11.83	Pyridine	4	0	0	0	4	1	0.607	0.607	4	0	0	0
11.782	1-Pentanol	4	1	0.222	0.222	4	0	0	0	4	0	0	0
12.41 - 13.08	Hexanal	4	3	0.169	3.61	4	4	0.18	0.265	4	1	0.172	0.172
13.42 - 13.43	Butyl ester acetic acid	4	1	0.342	0.342	4	0	0	0	4	0	0	0
13.66	Unknown	4	1	0.21	0.21	4	0	0	0	4	0	0	0
14.46 - 15.14	Cyclohexanone	4	0	0	0	4	1	0.184	0.184	4	1	1.22	1.22
15.28 - 16.54	Heptanal	4	1	0.807	0.807	4	1	0.221	0.221	4	0	0	0
15.81 - 16.51	Benzaldehyde	4	2	0.459	0.527	4	3	0.222	3.18	4	1	0.253	0.253
15.83- -15.84	alpha pinene	4	0	0	0	4	0	0	0	4	2	0.311	0.641
16.54 - 16.55	Alpha pinene	4	1	5.41	5.41	4	1	0.28	0.28	4	0	0	0
16.58 - 17.27	Octanal	4	3	0.302	2.09	4	3	0.183	0.206	4	1	0.189	0.189
16.649	unknown	4	0	0	0	4	0	0	0	4	1	0.221	0.221
16.649	beta pinene	4	0	0	0	4	0	0	0	4	1	0.235	0.235
16.79 - 17.80	Ethyl methyl benzene isomer	4	1	0.434	0.434	4	0	0	0	4	0	0	0
16.91	6-Methyl-5-hepten-2-one isomer	4	2	0.199	0.205	4	0	0	0	4	0	0	0
17.2 - 17.99	delta carene isomer	4	1	0.708	0.708	4	0	0	0	4	0	0	0
17.37	Beta pinene	4	1	1.13	1.13	4	0	0	0	4	0	0	0
17.473	l-Limonene	4	0	0	0	4	0	0	0	4	2	0.221	0.283
17.517	Cyclohexanone, trimethyl Isomer	4	0	0	0	4	0	0	0	4	1	0.369	0.369
17.99 - 18.19	Limonene Isomer	4	3	0.26	5.47	4	0	0	0	4	0	0	0
17.99	Isopropyl Toluene	4	1	1.47	1.47	4	0	0	0	4	0	0	0
18.13	2-hydroxy-benzaldehyde	4	0	0	0	4	1	0.232	0.232	4	0	0	0
18.24	Eucalyptol	4	1	0.73	0.73	4	0	0	0	4	0	0	0
18.38 - 19.07	Nonanal	4	4	0.216	2.32	4	4	0.303	0.591	4	3	0.371	0.484
18.4	Dimethyl Undecane Isomer	4	1	0.299	0.299	4	0	0	0	4	0	0	0
18.58 - 19.27	Undecane	4	1	0.291	0.291	4	0	0	0	4	0	0	0
18.8 -21.46	Unknown	4	1	0.525	0.525	4	0	0	0	4	2	0.365	13.8
18.8	Pentyl Cyclopentene Isomer	4	1	0.316	0.316	4	0	0	0	4	0	0	0
20.03 - 20.74	methoxy propenyl benzene isomer	4	0	0	0	4	2	0.275	0.618	4	1	3.24	3.24
20.69	Trichlorobenzene Isomer	4	0	0	0	4	1	0.894	0.894	4	0	0	0
20.74	Decanal	4	0	0	0	4	1	0.253	0.253	4	0	0	0
20.74	1-Methoxy-4-(2-Propenyl) Benzene	4	1	0.283	0.283	4	0	0	0	4	0	0	0
20.86 - 20.87	Naphthalene	4	1	0.628	0.628	4	0	0	0	4	0	0	0
21.41	1,1,2,3,4,4-Hexachloro-1,3- butadiene isomer	4	0	0	0	4	1	0.609	0.609	4	0	0	0

ppbv = parts per billion by volume
N: number of samples analyzed

Summary of Indoor Air Sampling Events in Florida: XAD-PAH TICS

Air Conditioning: OFF

		Unit: 100					Unit: 101					Unit: 102					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
10.01	1-Methoxy-4-(2-Propenyl)benzene	8	0	0	0	0	8	8	2.77	8.14	6.89	16	16	12.7	19.7	17.00	0.0016	Yes	100 = 101 101 = 102
10.097	Aldehyde/Unknown	8	8	6.36	10.4	7.82	8	0	0	0	0	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 = 102
11.05 - 11.11	Phenol, 4-chloro-3-methyl-	8	0	0	0	0	8	1	4.52	4.52	0.38	16	5	4.96	14	1.87	0.3464	No	100 =101 = 102
11.24	Isobornyl acetate	8	7	3.08	4.53	2.88	8	0	0	0	0	16	0	0	0	0	0.0059	Yes	100 = 101 101 = 102
11.288	Unknown Alcohol	8	1	4	4	0.33	8	0	0	0	0	16	0	0	0	0	0.2231	No	100 =101 = 102
11.91 - 12.12	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	8	8	5.13	8.53	6.73	8	8	7.54	31.5	25.35	16	16	68.2	150	110.15	0.0017	Yes	100 = 101 101 = 102
12.12 - 12.20	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	8	8	6.67	10.4	8.43	8	8	7.82	41.3	32.31	16	16	73.2	167	123.63	0.0017	Yes	100 = 101 101 = 102
12.79	Tricyclic Sesquiterpene	8	0	0	0	0	8	2	5.14	6.74	0.99	16	0	0	0	0	0.2231	No	100 =101 = 102
12.74	Unknown	8	0	0	0	0	8	1	5.46	5.46	0.46	16	0	0	0	0	0.2231	No	100 =101 = 102
12.74 - 12.79	C15 Aromatic Compound	8	0	0	0	0	8	3	3.99	5.52	2.75	16	0	0	0	0	0.0059	Yes	100 = 101 101 = 102
12.79	Unknown	8	0	0	0	0	8	1	6.32	6.32	0.53	16	0	0	0	0	0.2231	No	100 =101 = 102
12.83 - 12.88	1H-Indene, octahydro-2,2,4,4,7,7-hexamethyl-, trans-	8	0	0	0	0	8	3	7.53	10.4	2.16	16	0	0	0	0	0.0408	Yes	100 = 101 101 = 102
12.83 - 12.88	C15 Aromatic Compound	8	0	0	0	0	8	5	4.35	7.06	4.05	16	0	0	0	0	0.0007	Yes	100 ≠ 101 101 ≠ 102
13.29	Unknown C15 Aromatic Compound	8	0	0	0	0	8	2	5.78	6.21	1.00	16	0	0	0	0	0.2231	No	100 =101 = 102
13.23 - 13.29	Decahydro-4,4,8,9,10-pentamethylnaphthalene	8	0	0	0	0	8	4	4.04	5.83	2.30	16	0	0	0	0	0.0059	Yes	100 = 101 101 = 102
14.45	Butanoic Acid, 2-Butoxy-1-Methoxyethyl Ester	8	0	0	0	0	8	0	0	0	0	16	1	3.03	3.03	0.13	0.6065	No	100 =101 = 102
14.45	Propanoic acid, 2-methyl-, 1-(1,1-dimethylethyl)-2-methyl-1,3-propanediyl ester	8	0	0	0	0	8	0	0	0	0	16	2	5.13	5.51	1.33	0.3442	No	100 =101 = 102
14.45	Trimethyl Pentanediol Diisobutyrate Isomer	8	0	0	0	0	8	0	0	0	0	16	1	4.1	4.1	0.17	0.6065	No	100 =101 = 102
17.75 - 17.82	Dibutyl phthalate	8	0	0	0	0	8	1	7.63	7.63	0.64	16	1	6.73	6.73	0.28	0.5454	No	100 =101 = 102

µg/m3: micrograms per cubic meter

N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.

Kruskal-Wallis tests were computed using SAS® version 9.0 for Windows.

Statistical comparisons were performed with alpha=0.05.

If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.

Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Florida Drywall Indoor XAD-PAH TICS
Air Conditioning: ON

		Unit: 100					Unit: 101					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Conclusion
3.702	Toluene	8	2	2.22	2.33	0.38	8	0	0	0	0	0.1859	100 = 101
4.09 - 4.14	Hexanal	8	7	7.44	13	7.47	8	7	1.53	13.8	4.07	0.7702	100 = 101
4.396	Acetic acid, butyl easter	8	1	2	2	0.17	8	0	0	0	0	0.4533	100 = 101
4.76	2-Pentanone, 4-hydroxy-4-methyl-	8	0	0	0	0	8	3	1.74	1.93	1.06	0.0472	100 = 101
4.834	Unknown Ketone	8	2	2.22	2.33	0.38	8	0	0	0	0	0.3173	100 = 101
4.84	Unknown	8	1	2.33	2.33	0.19	8	0	0	0	0	0.3173	100 = 101
5.13 - 5.21	Ethylbenzene	8	5	1.79	2.67	1.00	8	8	1.74	3.6	2.77	0.0814	100 = 101
5.26	Benzene, 1,3-dimethyl-	8	0	0	0	0	8	1	5.76	5.76	0.48	0.3173	100 = 101
5.26 - 5.34	Xylene isomer	8	7	3.33	5.33	3.25	8	7	5.2	7.86	6.12	0.1489	100 = 101
5.53 - 5.61	2-Heptanone	8	0	0	0	0	8	4	2.28	2.52	1.59	0.0139	100 ≠ 101
5.60 - 5.68	Styrene	8	1	2.33	2.33	0.19	8	8	2.13	3.09	2.63	0.018	100 ≠ 101
5.65 - 5.72	Xylene isomer/Unknown	8	7	2.05	3.33	2.05	8	8	2.71	4.13	3.44	0.0433	100 ≠ 101
5.71 - 5.79	Heptanal	8	7	3.08	4.67	2.74	8	8	4.05	4.87	4.46	0.1465	100 = 101
5.78 - 6.38	Pinene isomer	8	7	28.5	45	26.06	8	8	88.9	106	96.73	0.0209	100 ≠ 101
6.55 - 6.78	Benzaldehyde+ C9 Alkyl benzene	8	7	4.36	7.67	4.27	8	8	6.26	8.18	7.13	0.0833	100 = 101
6.55 - 6.63	Camphene/Alkane	8	2	2	2.5	0.38	8	8	2.97	3.59	3.25	0.018	100 ≠ 101
6.725	Unknown Alkane	8	2	2	3.61	0.47	8	0	0	0	0.00	0.3173	100 = 101
6.726	Unknown Alcohol	8	1	3.33	3.33	0.28	8	0	0	0	0	0.3173	100 = 101
6.74 - 6.80	Heptanol+Unknown	8	0	0	0	0	8	6	3.31	4.45	2.56	0.0472	100 ≠ 101
6.816	C7 Alcohol + Unknown	8	0	0	0	0	8	2	3.75	3.97	1.31	0.1306	100 = 101
6.98 - 7.06	Pinene isomer	8	7	6.15	12.3	5.93	8	8	15.9	19.3	17.47	0.0209	100 ≠ 101
7.10 - 7.11	Furan, 2-pentyl- /Unknown	8	0	0	0	0	8	4	5.88	8.63	3.50	0.0472	100 ≠ 101
7.1	Pentyl Furan Isomer	8	0	0	0	0	8	1	6.31	6.31	0.53	0.3173	100 = 101
7.20 - 7.25	C9 Alkyl benzene+Unknown	8	0	0	0	0	8	8	7.46	9.52	8.46	0.0132	100 ≠ 101
7.26 - 7.34	Octanal/Unknown	8	7	5.33	9	4.84	8	8	6.69	8.9	7.71	0.0433	100 ≠ 101
7.276	Trimethylbenzene Isomer	8	7	4.76	7.67	4.19	8	0	0	0	0	0.0472	100 ≠ 101
7.62 - 7.70	Ethylhexanol Isomer	8	1	3	3	0.25	8	8	11.6	15.5	12.88	0.018	100 ≠ 101
7.71	Limonene Isomer	8	0	0	0	0	8	8	17.9	28.2	23.5	0.0139	100 ≠ 101
7.725	Methylethylbenzene Isomer	8	7	9	15.7	8.69	8	0	0	0	0	0.0472	100 ≠ 101
7.77 -7.79	Limonene Isomer	8	7	29.5	49	26.29	8	0	0	0	0	0.0472	100 ≠ 101
7.847	Eucalyptol/Alkane	8	7	3.49	5.28	3.04	8	0	0	0	0	0.0472	100 ≠ 101
7.85	C9H10 Benzene Isomer	8	0	0	0	0	8	1	2.32	2.32	0.19	0.3173	100 = 101
8.03 - 8.12	C10 Alkyl benzene+Alkane	8	0	0	0	0	8	2	2.17	2.91	0.42	0.1306	100 = 101
8.24	Unknown	8	0	0	0	0	8	8	3.02	3.91	3.40	0.0139	100 ≠ 101
8.32	Acetophone+Unknown	8	1	2.86	2.86	0.24	8	0	0	0	0	0.3173	100 = 101
8.323	Unknown Alcohol	8	5	2.82	4	1.83	8	0	0	0	0	0.0472	100 ≠ 101
8.499 - 8.595	Dimethylethylbenzene Isomer + Unknown	8	6	2.54	4.61	2.19	8	0	0	0	0	0.0472	100 ≠ 101
8.51 - 8.57	C10 H16 Alkyl benzene+Unknown	8	0	0	0	0	8	8	2.33	3	2.65	0.0139	100 ≠ 101
8.62 - 8.68	Undecane	8	0	0	0	0	8	8	4.71	5.72	5.09	0.0139	100 ≠ 101
8.69 - 8.77	Nonanal	8	1	4.33	4.33	0.36	8	8	8.49	10.5	9.41	0.018	100 ≠ 101
8.697	Undecane/Unknown	8	3	1.79	3	0.95	8	0	0	0	0	0.0472	100 ≠ 101
8.702	C10 H16 Alkyl benzene+Unknown Alkane	8	1	1.79	1.79	0.15	8	0	0	0	0	0.3173	100 = 101
8.718	Unknown	8	3	2.54	4	0.78	8	0	0	0	0	0.1306	100 = 101
8.772	Nonanal	8	6	9.49	16	7.45	8	0	0	0	0	0.0472	100 ≠ 101
9.44 - 9.45	C10 H12 benzene Isomer+Unknown	8	0	0	0	0	8	3	1.64	1.69	0.42	0.1306	100 = 101
9.52 - 9.61	Acetic acid, phenylmethyl ester	8	6	1.79	3.61	1.50	8	2	2.16	2.27	0.37	0.1391	100 = 101
9.536	C10H12 Benzene Isomer	8	2	1.59	1.67	0.27	8	0	0	0	0	0.3173	100 = 101
9.54	Unknown	8	1	1.59	1.59	0.40	8	0	0	0	0	0.3173	100 = 101
10.01 - 10.06	Estragole	8	0	0	0	0	8	4	3.44	4.09	1.78	0.1306	100 = 101
10.01	1-Methoxy-4-(2-Propenyl)benzene	8	0	0	0	0	8	4	3.24	3.94	1.83	0.1306	100 = 101
10.097	Aldehyde/Unknown	8	6	4.44	6	3.19	8	0	0	0	0	0.0472	100 ≠ 101
11.05 - 11.11	Phenol, 4-chloro-3-methyl-	8	0	0	0	0	8	1	1.95	1.95	0.16	0.3173	100 = 101
11.24	Isobornyl acetate	8	6	1.9	3.33	1.57	8	0	0	0	0	0.0472	100 ≠ 101
11.288	Unknown	8	1	2.67	2.67	0.22	8	0	0	0	0	0.3173	100 = 101
11.288	Unknown Alcohol	8	5	1.79	2.5	1.16	8	0	0	0	0	0.0472	100 ≠ 101
11.91 - 12.12	Propanoic acid, 2-methyl-, 2,2-dimethyl-1 (2-hydroxy-1-methylethyl)propyl ester	8	6	2.86	4.33	2.35	8	8	8.69	13.1	10.25	0.0209	100 ≠ 101
12.12 - 12.20	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	8	6	3.81	5	2.86	8	8	12.5	17.9	14.46	0.0209	100 ≠ 101
12.21	C15 Aromatic Compound	8	0	0	0	0	8	1	1.53	1.53	0.13	0.3173	100 = 101
12.74	Cedrene Isomer	8	0	0	0	0	8	1	3.43	3.43	0.29	0.3173	100 = 101
12.74 - 12.79	Copaene	8	0	0	0	0	8	1	4.09	4.09	0.34	0.3173	100 = 101
12.762	Naphthalene, 1,2,3,5,6,7,8,8a-octahydro-1,8a-dimethyl-7-(1-methylethenyl)-,	8	1	2.22	2.22	0.56	8	0	0	0	0	0.3173	100 = 101
12.74 - 12.79	C15 Aromatic Compound	8	0	0	0	0	8	6	2.58	3.71	2.46	0.0139	100 ≠ 101
12.83 - 12.88	C15 Aromatic Compound	8	0	0	0	0	8	8	3.18	4.8	3.74	0.0139	100 ≠ 101
13.23 - 13.29	Decahydro-4,4,8,9,10-pentamethylnaphthalene	8	0	0	0	0	8	8	2.66	3.8	3.04	0.0139	100 ≠ 101

µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed
**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 100 to Unit 101.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Outdoor Air Sampling Events in Florida: XAD-PAH TICS

		Unit: 100				Unit: 101				Unit: 102			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)
3.702	Toluene	3	1	2.42	2.42	4	0	0	0	4	0	0	0
4.09 - 4.14	Hexanal	3	1	12.1	12.1	4	0	0	0	4	0	0	0
4.396	Acetic acid, butyl easter	3	1	2	2	4	0	0	0	4	0	0	0
4.84	Unknown	3	1	2.33	2.33	4	0	0	0	4	0	0	0
5.13 - 5.21	Ethylbenzene	3	1	2.67	2.67	4	0	0	0	4	0	0	0
5.26 - 5.34	Xylene isomer	3	1	5.15	5.15	4	0	0	0	4	0	0	0
5.65 - 5.72	Xylene isomer/Unknown	3	1	3.33	3.33	4	0	0	0	4	0	0	0
5.71 - 5.79	Heptanal	3	1	4.55	4.55	4	0	0	0	4	0	0	0
5.78 - 6.38	Pinene isomer	3	1	37.9	37.9	4	0	0	0	4	0	0	0
6.55 - 6.78	Benzaldehyde+ C9 Alkyl benzene	3	1	6.36	6.36	4	0	0	0	4	0	0	0
6.55 - 6.63	Camphene/Alkane	3	1	2.73	2.73	4	0	0	0	4	0	0	0
6.725	Unknown Alkane	3	1	2.73	2.73	4	0	0	0	4	0	0	0
6.98 - 7.06	Pinene isomer	3	1	8.18	8.18	4	0	0	0	4	0	0	0
7.26 - 7.34	Octanal/Unknown	3	1	8.79	8.79	4	0	0	0	4	0	0	0
7.276	Trimethylbenzene Isomer	3	1	6.67	6.67	4	0	0	0	4	0	0	0
7.77 -7.79	Limonene Isomer	3	1	41.5	41.5	4	0	0	0	4	0	0	0
7.847	Eucalyptol/Alkane	3	1	4.55	4.55	4	0	0	0	4	0	0	0
8.323	Unknown Alcohol	3	1	3.64	3.64	4	0	0	0	4	0	0	0
8.499 - 8.595	Dimethylethylbenzene isomer + Unknown	3	1	5.76	5.76	4	0	0	0	4	0	0	0
8.697	Undecane/Unknown	3	1	2.42	2.42	4	0	0	0	4	0	0	0
8.702	C10 H16 Alkyl benzene+Unknown Alkane	3	1	3.03	3.03	4	0	0	0	4	0	0	0
8.772	Nonanal	3	2	1.59	14.5	4	0	0	0	4	0	0	0
10.097	Aldehyde/Unknown	3	1	5.45	5.45	4	0	0	0	4	0	0	0
11.05 - 11.11	Phenol, 4-chloro-3-methyl-	3	0	0	0	4	4	2.61	11.3	4	4	2.41	14.4
11.24	Isobornyl acetate	3	1	2.42	2.42	4	0	0	0	4	0	0	0
11.91 - 12.12	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	3	1	3.03	3.03	4	0	0	0	4	0	0	0
12.12 - 12.20	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	3	1	3.33	3.33	4	0	0	0	4	0	0	0

N: number of samples analyzed
µg/m3: micrograms per cubic meter

Descriptive Statistics for Indoor Air Sampling Events in Louisiana: Aldehydes
Analytical Method: EPA TO-11A

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Kruskal-Wallis Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Acetaldehyde	OFF	200	8	0	15	20	17.67	1.87	0.1261	NO	200 = 201 = 202
		201	8	0	11	17	14.25	2.75			
		202	15	0	12	24	16.98	3.75			
	ON	200	8	0	10	13	12.08	1.03	0.3807	N/A	200 = 201
		201	8	0	11	16	13.92	2.50			
Benzaldehyde	OFF	200	8	0	1.7	2.8	2.27	0.32	0.015	YES	200 ≠ 201 201 = 202
		201	8	0	0.88	1.7	1.37	0.34			
		202	16	0	1.2	2.2	1.72	0.25			
	ON	200	8	0	0.99	1.6	1.26	0.23	0.8852	N/A	200 = 201
		201	8	0	0.88	1.6	1.20	0.25			
Butyraldehyde	OFF	200	8	0	1.4	2.2	1.93	0.29	0.1855	NO	200 = 201 = 202
		201	8	0	1.5	2.9	2.33	0.62			
		202	16	0	1.1	2.2	1.65	0.25			
	ON	200	8	0	0.76	1.1	0.95	0.14	0.0304	N/A	200 ≠ 201
		201	8	0	1.5	2.3	1.84	0.43			
Formaldehyde	OFF	200	8	0	90	130	116.58	12.62	0.0016	YES	200 = 201 201 ≠ 202
		201	8	0	46	130	88.75	34.36			
		202	16	0	200	400	323.75	71.83			
	ON	200	8	0	30	55	43.92	10.37	0.1123	N/A	200 = 201
		201	8	0	46	76	58.25	14.20			
Isovaleraldehyde	OFF	200	8	0	0.54	0.85	0.70	0.09	0.3682	NO	200 = 201 = 202
		201	8	0	0.5	1.3	0.90	0.28			
		202	16	0	0.27	0.83	0.62	0.14			
	ON	200	8	0	0.29	0.44	0.36	0.06	0.0304	N/A	200 ≠ 201
		201	8	0	0.5	0.91	0.71	0.19			
m,p-Tolualdehyde	OFF	200	8	0	ND	ND	N/A	N/A	N/A	N/A	No comparisons made. Greater than 80% NDs for all units.
		201	8	0	ND	ND	N/A	N/A			
		202	16	94	ND	0.28	N/A	N/A			
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	8	100	ND	ND	N/A	N/A			
n-Hexaldehyde	OFF	200	8	0	16	24	19.33	3.19	0.0133	YES	200 = 201 201 ≠ 202
		201	8	0	16	28	23.50	5.74			
		202	16	0	6.5	20	13.54	2.87			
	ON	200	8	0	8.3	13	10.66	1.80	0.0304	N/A	200 ≠ 201
		201	8	0	16	24	19.92	4.34			
Propionaldehyde	OFF	200	8	0	2.4	3.4	3.10	0.37	0.0112	YES	200 = 201 201 ≠ 202
		201	8	0	1.8	3.5	2.80	0.73			
		202	16	0	2.9	6.7	4.31	0.76			
	ON	200	8	0	1.4	1.8	1.58	0.17	0.0427	N/A	200 ≠ 201
		201	8	0	1.8	2.6	2.20	0.41			
Valeraldehyde	OFF	200	8	0	4.3	6.6	5.48	0.77	0.0952	NO	200 = 201 = 202
		201	8	0	4.5	9.9	7.68	2.32			
		202	16	0	2.8	6.4	4.68	0.77			
	ON	200	8	0	2.2	3.2	2.81	0.43	0.0304	N/A	200 ≠ 201
		201	8	0	4.5	7.7	6.13	1.59			

ppbv: parts per billion by volume
ND: non-detect
%: percent
WRS: Wilcoxon-Rank-Sum
N/A: not applicable

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.

Descriptive Statistics for Outdoor Air Sampling Events in Louisiana: Aldehydes
Analytical Method: EPA TO-11A

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)	Mean Detected Values (ppbv)	Standard Deviation (ppbv)
2,5-Dimethylbenzaldehyde	200	4	75	0.63	0.63	0.63	N/A
	201	4	100	N/A	N/A	N/A	N/A
	202	3	0	0.075	0.079	0.077	0.002
Acetaldehyde	200	4	25	0.49	1.2	0.883	0.361
	201	4	0	0.37	1.2	0.75	0.413
	202	4	25	0.94	2	1.447	0.532
Benzaldehyde	200	4	100	N/A	N/A	N/A	N/A
	201	4	75	1.1	1.1	1.1	N/A
	202	4	50	0.18	0.22	0.2	0.0283
Butyraldehyde	200	4	100	N/A	N/A	N/A	N/A
	201	4	50	0.18	0.22	0.2	0.0283
	202	4	50	0.15	0.22	0.185	0.0495
Formaldehyde	200	4	0	0.96	6.5	4.415	2.589
	201	4	0	2.6	4.5	3.675	0.854
	202	4	0	1.6	8.6	5.325	3.074
m,p-Tolualdehyde	200	4	75	0.22	0.22	0.22	N/A
	201	4	100	N/A	N/A	N/A	N/A
	202	4	75	0.18	0.18	0.18	N/A
n-Hexaldehyde	200	4	75	0.35	0.35	0.35	N/A
	201	4	75	0.18	0.18	0.18	N/A
	202	4	100	N/A	N/A	N/A	N/A
o-Tolualdehyde	200	4	75	0.19	0.19	0.19	N/A
	201	4	100	N/A	N/A	N/A	N/A
	202	4	75	0.26	0.26	0.26	N/A
Propionaldehyde	200	4	100	N/A	N/A	N/A	N/A
	201	4	100	N/A	N/A	N/A	N/A
	202	4	50	0.18	0.25	0.215	0.0495
Valeraldehyde	200	4	100	N/A	N/A	N/A	N/A
	201	4	100	N/A	N/A	N/A	N/A
	202	4	50	0.13	0.14	0.135	0.00707

ppbv: parts per billion by volume
ND: non-detect
%: percent
N/A: not applicable

Descriptive Statistics for indoor Drywall Sampling Events in Louisiana: Acids
Analytical Method: NIOSH 7903 Modified

Analyte	Air Conditioning (On/OFF)	Unit	Number of Observations	% Nondetects	Minimum (mg/m3)	Maximum (mg/m3)	*Weighted Mean (mg/m3)	*Standard Deviation (mg/m3)	Conclusions
Sulfuric Acid	OFF	200	8	88	ND	0.04	N/A	N/A	Greater than 80% NDs. No comparisons were made.
		201	8	88	ND	0.036	N/A	N/A	
		202	8	100	ND	ND	N/A	N/A	
	ON	200	8	100	ND	ND	N/A	N/A	**No comparisons were made.
		201	8	75	ND	0.046	N/A	N/A	
Nitric Acid	OFF	200	8	100	ND	ND	N/A	N/A	Greater than 80% NDs. No comparisons were made.
		201	8	100	ND	ND	N/A	N/A	
		202	8	88	ND	0.018	N/A	N/A	
	ON	200	8	100	ND	ND	N/A	N/A	200 = 201
		201	8	100	ND	ND	N/A	N/A	
Hydrochloric Acid	OFF	200	8	100	ND	ND	N/A	N/A	200 = 201 = 202
		201	8	100	ND	ND	N/A	N/A	
		202	8	100	ND	ND	N/A	N/A	
	ON	200	8	100	ND	ND	N/A	N/A	**No comparisons were made.
		201	8	88	ND	0.019	N/A	N/A	

mg/m3: milligrams per cubic meter
ND: non-detect
%: percent
N/A: not applicable

Notes:
* Computations only include measurements above the reporting limit.
** No comparisons were made. Replicate samples included measurements above the reporting limit and below the reporting limt.

Descriptive Statistics for Outdoor Drywall Sampling Events in Louisiana: Sulfuric Acid
Analytical Method: NIOSH 7903 Modified

Analyte	Unit	Number of Observations	% Nondetects	Minimum (mg/m3)	Maximum (mg/m3)	Mean Detected Values (mg/m3)	Standard Deviation (mg/m3)
Sulfuric Acid	200	4	50	ND	0.047	0.045	N/A
	201	4	25	ND	0.045	0.040	0.005
	202	3	100	ND	ND	N/A	N/A

mg/m3: milligrams per cubic meter
ND: non-detect
%: percent
N/A: not applicable

Notes:
All other compounds were 100% NDs.

Descriptive Statistics for Indoor Air Sampling Events in Louisiana - VOCs
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
1,1,1-Trichloroethane	OFF	200	8	0	0.64	19.85	8.15	9.26	N/A	N/A	N/A	200 ≠ 201 201 = 202
		201	8	100	ND	ND	N/A	N/A				
		202	16	100	ND	ND	N/A	N/A				
	ON	200	8	0	1.3	8.84	3.48	2.77	N/A	N/A	N/A	200 ≠ 201
		201	8	100	ND	ND	N/A	N/A				
Benzene	OFF	200	8	0	0.83	1.23	1.04	0.16	Kruskal-Wallis	0.0074	YES	200 ≠ 201 201 ≠ 202
		201	8	0	0.44	0.57	0.50	0.05				
		202	16	0	0.65	1.22	0.89	0.18				
	ON	200	8	13	ND	0.67*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	75	ND	0.41*	N/A	N/A				
Cumene	OFF	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	200 = 201 = 202
		201	8	100	ND	ND	N/A	N/A				
		202	16	100	ND	ND	N/A	N/A				
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	200 = 201
		201	8	100	ND	ND	N/A	N/A				
Cyclohexane	OFF	200	8	0	0.38	1.01	0.63	0.26	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	100	ND	ND	N/A	N/A				
		202	16	94	ND	0.46*	N/A	N/A				
	ON	200	8	50	ND	0.42*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	100	ND	ND	N/A	N/A				
D-Limonene	OFF	200	8	0	5.29	9.68	7.16	1.73	Kruskal-Wallis	0.0175	YES	200 ≠ 201 201 = 202
		201	8	0	2.5	4.2	3.40	0.57				
		202	16	0	1.37	6.2	3.84	1.55				
	ON	200	8	0	0.44	3.69	2.23	1.23	WMW	1.115	N/A	200 = 201
		201	8	0	1.19	3.46	2.36	0.88				
Ethylbenzene	OFF	200	8	0	1.79	2.68	2.34	0.37	Kruskal-Wallis	0.0433	YES	200 ≠ 201 201 = 202
		201	8	0	0.53	0.72	0.60	0.07				
		202	16	0	0.26	0.79	0.57	0.19				
	ON	200	8	13	ND	1.21	0.95	0.21	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	75	ND	0.27*	N/A	N/A				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test
WRS: Wilcoxon-Rank-Sum Test

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Louisiana - VOCs (continued)
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Methylcyclohexane	OFF	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	75	ND	0.27*	N/A	N/A				
		202	16	75	ND	0.29*	N/A	N/A				
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	200 = 201
		201	8	100	ND	ND	N/A	N/A				
n-Decane	OFF	200	8	0	0.42	0.79	0.57	0.15	WRS (200 vs. 201)	0.0304	N/A	200 ≠ 201 201 vs. 202: Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	0	9.41	16.8	12.36	1.86				
		202	16	6	ND	0.36*	N/A	N/A				
	ON	200	8	25	ND	0.33*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	0	1.44	5.13	3.27	1.46				
n-Dodecane	OFF	200	8	0	0.22	0.35	0.28	0.04	Kruskal-Wallis	0.0043	YES	200 ≠ 201 201 = 202
		201	8	0	1.16	2.34	1.59	0.38				
		202	16	0	0.26	0.76	0.47	0.17				
	ON	200	8	50	ND	0.19*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	0	0.17	0.62	0.40	0.18				
n-Heptane	OFF	200	8	13	ND	0.56*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	0	0.4	0.65	0.53	0.10				
		202	16	25	ND	0.56*	N/A	N/A				
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	88	ND	0.31*	N/A	N/A				
n-Hexadecane	OFF	200	8	0	0.26	0.34	0.31	0.03	Kruskal-Wallis	0.0117	YES	200 = 201 201 ≠ 202
		201	8	0	0.15	0.22	0.19	0.01				
		202	16	0	0.23	0.59	0.37	0.11				
	ON	200	8	38	ND	0.14*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	100	ND	ND	N/A	N/A				
n-Nonanal	OFF	200	8	0	11.34	15.38	13.32	1.01	Kruskal-Wallis	0.6723	NO	200 = 201 = 202
		201	8	0	8.67	20.97	14.92	2.18				
		202	16	0	6.7	18.56	13.31	3.26				
	ON	200	8	13	ND	10.28	7.95	1.11	Gehan's	1.436	N/A	200 = 201
		201	8	0	4.73	13.46	8.08	3.29				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test
WRS: Wilcoxon-Rank-Sum Test

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Louisiana - VOCs (continued)
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
n-Pentadecane	OFF	200	8	0	0.34	0.41	0.37	0.03	Kruskal-Wallis	0.0017	YES	200 = 201 201 ≠ 202
		201	8	0	0.21	0.31	0.27	0.03				
		202	16	0	0.4	1.03	0.69	0.19				
	ON	200	8	63	ND	0.24*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	100	ND	ND	N/A	N/A				
n-Tetradecane	OFF	200	8	0	0.28	0.43	0.34	0.07	Kruskal-Wallis	0.0017	YES	200 = 201 201 ≠ 202
		201	8	0	0.14	0.22	0.17	0.03				
		202	16	0	0.71	1.81	1.27	0.37				
	ON	200	8	25	ND	0.21*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	100	ND	ND	N/A	N/A				
n-Tridecane	OFF	200	8	88	ND	0.14*	N/A	N/A	WRS (200 vs. 201)	0.0085	NO	200 vs. 201: Greatest reporting limit is greater than all detects. Cannot compare. 201 ≠ 202
		201	8	0	0.14	0.28	0.20	0.05				
		202	16	0	0.41	1.01	0.75	0.21				
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	200 = 201
		201	8	100	ND	ND	N/A	N/A				
n-Undecane	OFF	200	8	0	0.33	0.53	0.40	0.07	Kruskal-Wallis	0.0134	YES	200 = 201 201 ≠ 202
		201	8	0	4.78	8.51	6.24	1.23				
		202	16	0	0.21	0.6	0.38	0.12				
	ON	200	8	13	ND	0.32	0.25	0.06	Gehan's	1.983	N/A	200 =201
		201	8	0	0.79	2.76	1.81	0.79				
ortho-Xylene	OFF	200	8	0	2.88	4.44	3.36	0.61	Kruskal-Wallis	0.0017	YES	200 = 201 201 = 202
		201	8	0	0.84	1.26	1.00	0.14				
		202	16	0	0.27	0.86	0.60	0.20				
	ON	200	8	13	ND	2.1	1.62	0.54	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	25	ND	0.43*	N/A	N/A				
para-Xylene	OFF	200	8	0	5.22	7.81	6.56	1.00	Kruskal-Wallis	0.0017	YES	200 = 201 201 = 202
		201	8	0	2.34	3.45	2.73	0.37				
		202	16	0	0.64	1.91	1.36	0.44				
	ON	200	8	0	0.47	3.68	2.09	1.21	WMW	0.194	N/A	200 = 201
		201	8	0	0.34	1.17	0.77	0.34				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test
WRS: Wilcoxon-Rank-Sum Test

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Air Sampling Events in Louisiana - VOCs (continued)
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Weighted Mean (ppbv)	Standard Deviation (ppbv)	Statistical Test	Probability Value	Follow-Up Multiple Comparisons?	Conclusions
Styrene	OFF	200	8	0	0.78	1.57	0.98	0.31	WRS (200 vs. 201)	0.0304	N/A	200 ≠ 201 201 vs. 202: Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	0	0.6	0.81	0.69	0.11				
		202	16	19	ND	1.41*	N/A	N/A				
	ON	200	8	25	ND	0.86*	N/A	N/A	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	63	ND	0.49*	N/A	N/A				
Tetrachloroethene	OFF	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	200 = 201 201 vs. 202: Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	100	ND	ND	N/A	N/A				
		202	16	94	ND	0.15*	N/A	N/A				
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	N/A	200 = 201
		201	8	100	ND	ND	N/A	N/A				
Toluene	OFF	200	8	0	4.82	8.09	6.56	1.28	Kruskal-Wallis	0.0017	YES	200 ≠ 201 201 = 202
		201	8	0	0.98	1.24	1.08	0.07				
		202	16	0	1	2.5	1.93	0.51				
	ON	200	8	0	0.55	2.92	1.84	0.90	N/A	N/A	N/A	Greatest reporting limit is greater than all detects. Cannot compare.
		201	8	13	ND	0.69*	N/A	N/A				

ppbv: parts per billion by volume
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test
WRS: Wilcoxon-Rank-Sum Test
vs.: versus

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's and WMW comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Outdoor Air Sampling Events in Louisiana - VOCs
Analytical Method: NIOSH 1500, 1501, & 1003

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)
Benzene	200	4	25	ND	0.46*
	201	4	25	ND	0.46*
	202	4	0	0.87	2.11
D-Limonene	200	4	75	ND	0.34
	201	4	100	ND	ND
	202	4	100	ND	ND
Ethylbenzene	200	4	100	ND	ND
	201	4	100	ND	ND
	202	4	50	ND	0.31*
ortho-Xylene	200	4	100	ND	ND
	201	4	100	ND	ND
	202	4	50	ND	0.36*
para-Xylene	200	4	100	ND	ND
	201	4	100	ND	ND
	202	4	0	0.26	0.94*
Toluene	200	4	50	ND	0.53*
	201	4	75	ND	0.32*
	202	4	0	0.65	1.5

ppbv: parts per billion by volume
ND: non-detect
%: percent
N/A: not applicable
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Drywall Sampling Events in Louisiana - VOCs
Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Kruskal-Wallis and WRS Probability Values	Follow-Up Multiple Comparisons?	Conclusions
1,1,1-Trichloroethane	OFF	200	4	0	0.307	12.1	4.62	5.54	0.0007	YES	200 ≠ 201 201 = 202
		201	4	100	ND	ND	N/A	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	0	0.0744	11.2	4.09	5.05	0.0211	N/A	200 ≠ 201
		201	4	100	ND	ND	N/A	N/A			
1,1,2,2-Tetrachloroethane	OFF	200	4	100	ND	ND	N/A	N/A	0.2231	NO	200 = 201 = 202
		201	4	75	ND	0.0849	0.08	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
1,2,4-Trimethylbenzene	OFF	200	4	0	0.897	2.01	1.45	0.53	0.0097	YES	200 = 201 201 ≠ 202
		201	4	0	0.231	2.42	1.47	1.00			
		202	8	0	0.077	0.271	0.18	0.08			
	ON	200	4	0	0.245	0.941	0.63	0.32	0.88523	N/A	200 = 201
		201	4	0	0.296	0.828	0.59	0.25			
1,2-Dichlorobenzene	OFF	200	4	100	ND	ND	N/A	N/A	0.2231	NO	200 = 201 = 202
		201	4	75	ND	0.293	N/A	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	75	ND	0.118	N/A	N/A	0.4533	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
1,2-Dichloroethane	OFF	200	4	0	0.092	0.166	0.13	0.04	0.0016	YES	200 = 201 201 ≠ 202
		201	4	100	ND	ND	N/A	N/A			
		202	8	0	0.74	3.49	1.98	1.04			
	ON	200	4	50	ND	0.114	0.10	0.02	0.6198	N/A	200 = 201
		201	4	75	ND	0.0935	N/A	N/A			
1,3,5-Trimethylbenzene	OFF	200	4	0	0.256	0.543	0.40	0.13	0.0028	YES	200 = 201 201 ≠ 202
		201	4	0	0.107	0.99	0.61	0.41			
		202	8	63	ND	0.0787	0.08	0.00			
	ON	200	4	0	0.0858	0.239	0.18	0.07	0.4705	N/A	200 = 201
		201	4	0	0.121	0.318	0.23	0.09			
1,3-Dichlorobenzene	OFF	200	4	100	ND	ND	N/A	N/A	N/A	N/A	No tests run. Greater than 80% NDs.
		201	4	75	ND	0.25	0.25	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
1,4-Dichlorobenzene	OFF	200	4	100	ND	ND	N/A	N/A	N/A	N/A	No tests run. Greater than 80% NDs.
		201	4	75	ND	0.349	0.35	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
2-Butanone	OFF	200	4	0	1.62	2.69	2.15	0.49	0.1657	NO	200 = 201 = 202
		201	4	0	0.741	3.38	2.30	1.17			
		202	8	0	0.839	2	1.58	0.39			
	ON	200	4	0	1.14	2.11	1.44	0.45	0.4705	N/A	200 = 201
		201	4	0	1.08	3.48	2.28	1.17			
2-Hexanone	OFF	200	4	0	0.163	0.259	0.22	0.043	0.242	NO	200 = 201 = 202
		201	4	25	ND	2.08	1.04	0.922			
		202	8	13	ND	0.447	0.28	0.134			
	ON	200	4	0	0.0879	0.176	0.13	0.040	0.1124	N/A	200 = 201
		201	4	0	0.133	0.41	0.25	0.119			
Acetone	OFF	200	4	0	41.3	60.7	47.18	9.12	0.1126	NO	200 = 201 = 202
		201	4	0	9.88	51	34.85	19.16			
		202	8	0	4.27	56.9	25.17	18.91			
	ON	200	4	0	17.2	39.6	28.65	9.19	0.1124	N/A	200 = 201
		201	4	0	34.2	60.6	46.80	12.26			
Benzene	OFF	200	4	0	0.439	0.798	0.60	0.15	0.0075	YES	200 ≠ 201 201 = 202
		201	4	0	0.107	0.228	0.18	0.06			
		202	8	0	0.222	0.513	0.40	0.10			
	ON	200	4	0	0.138	0.386	0.30	0.11	0.3123	N/A	200 = 201
		201	4	0	0.167	0.221	0.19	0.02			

ppbv: parts per billion by volume
ND: non-detect
%: percent
WRS: Wilcoxon Rank Sum test
N/A: not applicable

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Drywall Sampling Events in Louisiana - VOCs (continued)
Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Kruskal-Wallis and WRS Probability Values	Follow-Up Multiple Comparisons?	Conclusions
Carbon Tetrachloride	OFF	200	4	0	0.0931	0.103	0.10	0.00	0.0048	YES	200 ≠ 201 201 = 202
		201	4	25	ND	0.0805	0.08	0.00			
		202	8	13	ND	0.0908	0.08	0.00			
	ON	200	4	0	0.0861	0.0941	0.09	0.00	0.0304	N/A	200 ≠ 201
		201	4	0	0.0745	0.0791	0.08	0.00			
Chlorobenzene	OFF	200	4	100	ND	ND	N/A	N/A	N/A	N/A	No tests run. Greater than 80% NDs.
		201	4	75	ND	0.115	N/A	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Chloroform	OFF	200	4	25	ND	0.148	0.12	0.04	0.3043	NO	200 = 201 = 202
		201	4	75	ND	0.0815	0.08	N/A			
		202	8	38	ND	0.844	0.45	0.34			
	ON	200	4	50	ND	0.11	0.10	0.02	0.1859	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Chloromethane	OFF	200	4	25	ND	1	0.93	0.07	0.9156	NO	200 = 201 = 202
		201	4	0	0.347	1.05	0.78	0.30			
		202	8	0	0.532	1.26	0.89	0.24			
	ON	200	4	0	0.791	1.11	0.97	0.14	0.665	N/A	200 = 201
		201	4	0	0.854	1.08	0.94	0.10			
cis-1,2-Dichloroethene	OFF	200	4	100	ND	ND	N/A	N/A	0.5454	NO	200 = 201 = 202
		201	4	75	ND	0.107	N/A	N/A			
		202	8	88	ND	0.0979	0.10	N/A			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Cyclohexane	OFF	200	4	0	0.179	0.478	0.35	0.13	0.0188	YES	200 ≠ 201 201 = 202
		201	4	75	ND	0.104	N/A	N/A			
		202	8	50	ND	0.333	0.22	0.09			
	ON	200	4	0	0.0743	0.331	0.17	0.12	0.0545	N/A	200 = 201
		201	4	75	ND	0.0784	N/A	N/A			
Dichlorodifluoromethane	OFF	200	4	0	0.39	0.45	0.42	0.03	0.1151	NO	200 = 201 = 202
		201	4	0	0.133	0.331	0.27	0.09			
		202	8	0	0.194	0.539	0.35	0.11			
	ON	200	4	0	0.403	0.47	0.43	0.03	0.0304	N/A	200 ≠ 201
		201	4	0	0.279	0.381	0.33	0.05			
Ethyl Acetate	OFF	200	4	0	0.307	0.904	0.65	0.25	0.0284	YES	200 = 201 201 = 202
		201	4	25	ND	0.228	0.20	0.04			
		202	8	0	0.167	1.14	0.66	0.37			
	ON	200	4	0	0.132	0.315	0.20	0.08	0.1939	N/A	200 = 201
		201	4	0	0.073	0.205	0.11	0.06			
Ethylbenzene	OFF	200	4	0	1.08	2.13	1.62	0.43	0.0127	YES	200 = 201 201 = 202
		201	4	0	0.24	0.602	0.41	0.20			
		202	8	0	0.0925	0.492	0.34	0.15			
	ON	200	4	0	0.363	0.903	0.73	0.247	0.0304	N/A	200 ≠ 201
		201	4	0	0.0934	0.302	0.19	0.093			
Ethyltoluene	OFF	200	4	0	0.268	0.61	0.44	0.158	0.0215	YES	200 = 201 201 = 202
		201	4	25	ND	0.591	0.50	0.107			
		202	8	38	ND	0.0951	0.09	0.006			
	ON	200	4	0	0.078	0.271	0.20	0.090	0.665	N/A	200 = 201
		201	4	0	0.0809	0.209	0.15	0.062			
Heptane	OFF	200	4	0	0.24	0.409	0.32	0.08	0.8688	NO	200 = 201 = 202
		201	4	0	0.106	0.54	0.33	0.21			
		202	8	0	0.128	0.414	0.28	0.11			
	ON	200	4	25	ND	0.211	0.19	0.03	0.4705	N/A	200 = 201
		201	4	0	0.117	0.297	0.22	0.08			
Hexane	OFF	200	4	0	0.348	0.568	0.47	0.09	0.0273	YES	200 ≠ 201 201 = 202
		201	4	25	ND	0.222	0.17	0.07			
		202	8	0	0.147	0.499	0.36	0.15			
	ON	200	4	0	0.0872	0.336	0.23	0.12	0.4705	N/A	200 = 201
		201	4	0	0.121	0.178	0.14	0.03			

ppbv: parts per billion by volume
ND: non-detect
%: percent
WRS: Wilcoxon Rank Sum test
N/A: not applicable

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Drywall Sampling Events in Louisiana - VOCs (continued)
Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Kruskal-Wallis and WRS Probability Values	Follow-Up Multiple Comparisons?	Conclusions
Isopropyl Alcohol	OFF	200	4	0	2.70	6.98	5.11	1.88	0.0433	YES	200 ≠ 201 201 = 202
		201	4	0	0.439	2.67	1.87	0.98			
		202	8	0	1.06	5.04	2.66	1.33			
	ON	200	4	0	1.64	3.25	2.56	0.68	0.3123	N/A	200 = 201
		201	4	0	1.27	3.11	2.12	0.84			
m&p-Xylene	OFF	200	4	0	3.06	5.83	4.45	1.15	0.0068	YES	200 = 201 201 = 202
		201	4	0	0.765	2.79	1.83	1.04			
		202	8	0	0.197	1.27	0.78	0.38			
	ON	200	4	0	0.974	2.42	2.00	0.69	0.0606	N/A	200 = 201
		201	4	0	0.362	1.19	0.77	0.38			
Methyl Isobutyl Ketone	OFF	200	4	0	0.14	0.226	0.19	0.04	0.4287	NO	200 = 201 = 202
		201	4	25	ND	0.568	0.31	0.23			
		202	8	13	ND	0.201	0.16	0.03			
	ON	200	4	0	0.0668	0.136	0.10	0.03	0.8852	N/A	200 = 201
		201	4	25	ND	0.126	0.11	0.03			
Methylene Chloride	OFF	200	4	0	0.15	0.269	0.21	0.05	0.014	YES	200 ≠ 201 201 ≠ 202
		201	4	75	ND	0.0917	N/A	N/A			
		202	8	25	ND	0.288	0.22	0.07			
	ON	200	4	0	0.106	0.149	0.12	0.02	0.0211	N/A	200 ≠ 201
		201	4	100	ND	ND	N/A	N/A			
o-Xylene	OFF	200	4	0	1.7	2.74	2.21	0.57	0.0097	YES	200 = 201 201 = 202
		201	4	0	0.34	0.965	0.66	0.33			
		202	8	0	0.0833	0.515	0.34	0.16			
	ON	200	4	0	0.589	1.48	1.05	0.37	0.0304	N/A	200 ≠ 201
		201	4	0	0.137	0.437	0.28	0.14			
Styrene	OFF	200	4	0	0.53	0.946	0.72	0.20	0.3873	NO	200 = 201 = 202
		201	4	0	0.0706	0.914	0.53	0.40			
		202	8	0	0.121	0.882	0.47	0.27			
	ON	200	4	0	0.281	0.623	0.47	0.15	0.8852	N/A	200 = 201
		201	4	0	0.212	0.724	0.48	0.25			
Tetrachloroethene	OFF	200	4	75	ND	0.0744	N/A	N/A	0.3847	NO	200 = 201 = 202
		201	4	100	ND	ND	N/A	N/A			
		202	8	63	ND	0.0945	0.08	0.01			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Tetrahydrofuran	OFF	200	4	0	0.0892	0.32	0.21	0.12	0.2737	NO	200 = 201 = 202
		201	4	75	ND	0.472	N/A	N/A			
		202	8	75	ND	0.412	N/A	0.02			
	ON	200	4	25	ND	0.344	0.21	0.12	0.0689	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Toluene	OFF	200	4	0	2.94	6.58	4.70	1.52	0.0063	YES	200 ≠ 201 201 = 202
		201	4	0	0.389	0.908	0.64	0.29			
		202	8	0	0.53	1.77	1.21	0.53			
	ON	200	4	0	0.737	2.46	1.93	0.82	0.0294	N/A	200 ≠ 201
		201	4	0	0.259	0.55	0.41	0.13			
trans-1,2-dichloroethene	OFF	200	4	100	ND	ND	N/A	N/A	N/A	N/A	No comparisons made. Greater than 80% NDs.
		201	4	75	ND	0.101	N/A	N/A			
		202	8	100	ND	ND	N/A	N/A			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Trichloroethene	OFF	200	4	100	ND	ND	N/A	N/A	0.5558	NO	200 = 201 = 202
		201	4	75	ND	0.117	N/A	N/A			
		202	8	75	ND	0.0792	N/A	0.00			
	ON	200	4	100	ND	ND	N/A	N/A	N/A	N/A	200 = 201
		201	4	100	ND	ND	N/A	N/A			
Trichlorofluoromethane	OFF	200	4	0	0.339	2.12	1.07	0.86	0.0127	YES	200 ≠ 201 201 = 202
		201	4	0	0.0787	0.217	0.18	0.07			
		202	8	0	0.113	0.305	0.22	0.06			
	ON	200	4	0	0.306	2.25	0.99	0.88	0.0304	N/A	200 ≠ 201
		201	4	0	0.223	0.253	0.24	0.01			

ppbv: parts per billion by volume
ND: non-detect
%: percent
WRS: Wilcoxon Rank Sum test
N/A: not applicable

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS® version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Indoor Drywall Sampling Events in Louisiana - VOCs
Analytical Method: EPA TO-15

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum Detected (ppbv)	Mean (ppbv)	Standard Deviation (ppbv)	Kruskal-Wallis and WRS Probability Values	Follow-Up Multiple Comparisons?	Conclusions
Trichlorotrifluoroethane	OFF	200	4	0	0.102	0.718	0.35	0.30	0.0078	YES	200 ≠ 201 201 = 202
		201	4	25	ND	0.0736	0.07	0.00			
		202	8	0	0.0667	0.102	0.08	0.01			
	ON	200	4	0	0.093	0.767	0.33	0.31	0.0304	N/A	200 ≠ 201
		201	4	0	0.0703	0.084	0.08	0.01			
Vinyl Acetate	OFF	200	4	0	1.37	1.98	1.58	0.27	0.0751	NO	200 = 201 = 202
		201	4	0	0.367	1.46	1.06	0.49			
		202	8	0	0.978	3.77	2.19	0.97			
	ON	200	4	0	0.551	1.19	0.78	0.29	0.1939	N/A	200 = 201
		201	4	0	0.645	1.85	1.23	0.62			

ppbv: parts per billion by volume
ND: non-detect
%: percent
WRS: Wilcoxon Rank Sum test
N/A: not applicable

Notes:
Statistical testing was conducted with alpha=0.05.
For AC=OFF, if the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.
Gehan's comparisons were performed using ProUCL version 4.0.
Kruskal-Wallis and WRS tests were conducted using SAS* version 9.0 software.
Descriptive statistics are based on detected values only.
* Detected values are below the greatest reporting limit.

Descriptive Statistics for Outdoor Air Sampling Events in Louisiana- VOCs
Analytical Method: EPA TO-15

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)	Mean Detected Values (ppbv)	Standard Deviation (ppbv)
1,2,4-Trimethylbenzene	200	4	50	ND	0.09	0.0795	0.00785
	201	4	75	ND	0.11	N/A	N/A
	202	4	50	ND	0.17	0.132	0.0562
1,2-Dichloroethane	200	4	75	ND	0.07	N/A	N/A
	201	4	75	ND	0.09	N/A	N/A
	202	4	75	ND	0.28	N/A	N/A
2-Butanone	200	4	0	0.42	0.78	0.545	0.165
	201	4	0	0.71	1.04	0.835	0.15
	202	4	0	0.70	0.86	0.797	0.0728
2-Hexanone	200	4	75	ND	0.07	N/A	N/A
	201	4	75	ND	0.08	N/A	N/A
	202	4	50	ND	0.09	0.0891	0.00488
Acetone	200	4	50	ND	15	14.5	0.849
	201	4	0	11	29	16.05	8.793
	202	4	25	ND	16	10.37	8.103
Benzene	200	4	0	0.11	0.22	0.172	0.048
	201	4	0	0.10	0.26	0.15	0.0745
	202	4	0	0.16	0.90	0.425	0.33
Carbon Tetrachloride	200	4	0	0.08	0.09	0.087	0.00501
	201	4	0	0.08	0.08	0.0798	0.00232
	202	4	0	0.08	0.09	0.0889	0.0056
Chloroform	200	4	100	ND	ND	N/A	N/A
	201	4	75	ND	0	N/A	N/A
	202	4	75	ND	0	N/A	N/A
Chloromethane	200	4	0	0.77	1.00	0.851	0.102
	201	4	0	0.77	1.26	0.953	0.234
	202	4	0	0.45	0.86	0.724	0.188
Cyclohexane	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	50	ND	0.29	0.21	0.11
Dichlorodifluoromethane	200	4	0	0.39	0.42	0.403	0.0135
	201	4	0	0.35	0.40	0.381	0.0235
	202	4	0	0.32	0.58	0.433	0.11
Ethyl Acetate	200	4	50	ND	0.77	0.571	0.286
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.11	N/A	N/A
Ethylbenzene	200	4	75	ND	0.10	N/A	N/A
	201	4	75	ND	0.08	N/A	N/A
	202	4	50	ND	0.17	0.124	0.0645
Heptane	200	4	50	ND	0.09	0.0788	0.0153
	201	4	75	ND	0.10	N/A	N/A
	202	4	0	0.07	0.22	0.126	0.0699
Hexane	200	4	25	ND	0.18	0.15	0.0287
	201	4	50	ND	0.23	0.195	0.0445
	202	4	0	0.11	0.63	0.275	0.242
Isopropyl Alcohol	200	4	0	0.20	0.54	0.353	0.148
	201	4	0	0.20	1.65	0.613	0.694
	202	4	0	0.32	0.84	0.51	0.239

ppbv: parts per billion by volume
ND: non-detect
%: percent
N/A: not applicable

Descriptive Statistics for Outdoor Air Sampling Events in Louisiana- VOCs
Analytical Method: EPA TO-15

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppbv)	Maximum (ppbv)	Mean Detected Values (ppbv)	Standard Deviation (ppbv)
m&p-Xylene	200	4	0	0.07	0.21	0.126	0.0642
	201	4	50	ND	0.27	0.173	0.142
	202	4	0	0.16	0.44	0.253	0.129
Methyl Isobutyl Ketone	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.09	N/A	N/A
Methylene Chloride	200	4	75	ND	0.07	N/A	N/A
	201	4	75	ND	0.07	N/A	N/A
	202	4	50	ND	0.09	0.0939	0.00007
MTBE	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.12	N/A	N/A
o-Xylene	200	4	50	ND	0.09	0.0798	0.0177
	201	4	75	ND	0.10	N/A	N/A
	202	4	25	ND	0.16	0.107	0.0462
Styrene	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.07	N/A	N/A
Tetrachloroethene	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.08	N/A	N/A
Toluene	200	4	0	0.14	0.42	0.254	0.123
	201	4	0	0.08	0.50	0.201	0.199
	202	4	0	0	0.96	0.516	0.299
Trichloroethene	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.27	N/A	N/A
Trichlorofluoromethane	200	4	0	0.26	0.31	0.289	0.0199
	201	4	0	0.23	0.26	0.249	0.0137
	202	4	0	0.23	0.29	0.253	0.025
Trichlorotrifluoroethane	200	4	0	0.08	0.09	0.0878	0.0049
	201	4	0	0.07	0.10	0.0823	0.00996
	202	4	0	0.08	0.10	0.0908	0.0119
Vinyl Acetate	200	4	0	0.45	0.92	0.605	0.211
	201	4	0	0.92	1.14	1.035	0.0908
	202	4	0	0.72	2.12	1.255	0.605
Vinyl Chloride	200	4	100	ND	ND	N/A	N/A
	201	4	100	ND	ND	N/A	N/A
	202	4	75	ND	0.09	N/A	N/A

ppbv: parts per billion by volume
ND: non-detect
%: percent
N/A: not applicable

Descriptive Statistics for Indoor Air Sampling Events in Louisiana: Acetic and Formic Acids
Analytical Method: OSHA ID186

Analyte	Air Conditioning (ON/OFF)	Unit	Number of Observations	% Nondetects	Minimum (ppm)	Maximum (ppm)	Weighted Mean (ppm)	Standard Deviation (ppm)	WMW Probability Value	Follow-Up Multiple Comparisons?	Conclusions**
Acetic Acid	OFF	200	4	0	0.23	0.59	0.35	N/A	N/A	N/A	No Comparison Made.
		201	4	0	0.34	0.51	0.45	N/A			
		202	12	0	0.33	0.55	0.45	0.07			
	ON	200	8	0	0.062	0.45	0.17	0.19	0.312	N/A	200 = 201
		201	8	0	0.11	0.21	0.15	0.04			
Formic Acid	OFF	200	4	75	ND	0.63	N/A	N/A	N/A	N/A	No Comparison Made.
		201	4	25	ND	0.86	N/A	N/A			
		202	12	0	0.85	1.1	0.97	0.08			
	ON	200	8	100	ND	ND	N/A	N/A	N/A	N/A	No Comparison Made.
		201	8	0	0.7	0.8	0.75	0.02			

ppm: parts per million
ND: non-detect
%: percent
WMW: Wilcoxon-Mann-Whitney Test
N/A: not applicable

Notes:
Wilcoxon-Mann-Whitney test conducted using ProUCL version 4.0.
* *Some comparisons were not conducted due to small sample sizes. Replicate samples were averaged prior to comparisons leaving Units 200 and 201 with sample size = 2.

Descriptive Statistics for Outdoor Air Sampling Events in Louisiana: Acetic and Formic Acids
Analytical Method: OSHA ID186

Analyte	Unit	Number of Observations	% Nondetects	Minimum (ppm)	Maximum (ppm)	Mean Detected Values (ppm)	Standard Deviation (ppm)
Acetic Acid	200	3	100	ND	ND	N/A	N/A
	201	3	100	ND	ND	N/A	N/A
	202	3	100	ND	ND	N/A	N/A
Formic Acid	200	3	100	ND	ND	N/A	N/A
	201	3	33	ND	0.73	0.67	N/A
	202	3	0	0.6	0.72	0.63	0.08

ppm: parts per million
ND: non-detect
%: percent
N/A: not applicable

Summary of Indoor Air Sampling Events in Louisiana: Carbon Tube TICS (VOCs)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: ON

		Unit: 200					Unit: 201					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Conclusion
4.01	Pentanal	8	0	0	0	0	8	6	0	16.3	7.09	0.0689	200 = 201
5.48	Hexanal	8	7	0	27.1	13.90	8	8	22.1	63.1	36	0.0606	200 = 201
6.71	2-Heptanone	8	0	0	0	0	8	2	0	5.56	0.88	0.4533	200 = 201
7.32	Propylcyclohexane	8	0	0	0	0	8	2	0	5.16	1	0.4533	200 = 201
7.39	Pinene Isomer	8	8	25.4	134	97.10	8	8	47.1	121	86.34	0.6650	200 = 201
7.56	Unknown Alkane	8	0	0	0	0	8	3	0	5.16	1.26	0.4533	200 = 201
7.61	Camphene/Unknown	8	0	0	0	0	8	1	0	6.75	1	0.4533	200 = 201
7.63	4-methyl nonane	8	0	0	0	0	8	1	0	7.14	0.60	0.4533	200 = 201
7.66	Unknown alkane	8	0	0	0	0	8	2	0	7.14	1.01	0.4533	200 = 201
7.66	C10 alkane	8	0	0	0	0	8	2	0	10.3	1	0.4533	200 = 201
7.71	Methylethylbenzene Isomer/Unknown	8	0	0	0	0	8	5	0	8.33	4	0.0689	200 = 201
7.71	Methylethylbenzene Isomer	8	4	0	7.92	2.18	8	1	0	6.67	1	0.6198	200 = 201
7.74	3-methyl nonane	8	0	0	0	0	8	3	0	6.75	1.60	0.1859	200 = 201
7.96	Pinene Isomer	8	8	6.25	43.3	28.11	8	8	17.9	48.4	34.37	0.4705	200 = 201
8.02	2-Pentyl Furan	8	1	0	5	0.42	8	7	0	10.8	6.44	0.1241	200 = 201
8.13	Octanal/C9 Alkyl Benzene	8	1	0	9.58	2.40	8	0	0	0	0.00	0.4533	200 = 201
8.14	Octanal	8	1	0	12.1	1.01	8	2	0	21.3	4	0.4084	200 = 201
8.48	Methyl-methylethylbenzene Isomer	8	0	0	0	0	8	7	0	13.1	7.10	0.0689	200 = 201
8.79	Unknown alkane	8	0	0	0	0	8	1	0	4.76	0.40	0.4533	200 = 201
8.92	Unknown alkane	8	0	0	0	0	8	3	0	6.75	2	0.4533	200 = 201
9.7	Siloxane Compound	8	7	0	90.8	37.51	8	7	0	75.8	33.13	1.00	200 = 201
11.84	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	8	7	0	8.75	5.55	8	3	0	6.25	1	0.1241	200 = 201

µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed
**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Indoor Air Sampling Events in Louisiana: Carbon Tube TICS (VOCs)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
3.4	1,2-Dichloroethane	8	0	0	0	0	8	0	0	0	0	16	5	0	13.5	2.45	0.3442	NO	200 = 201 = 202
4.01	Pentanal	8	1	0	10	0.83	8	0	0	0	0	16	2	0	12.5	0.52	0.5558	NO	200 = 201 = 202
5.48	Hexanal	8	8	37.5	54.2	48.17	8	8	43.7	93.8	68.45	16	16	18.7	70	45.90	0.2332	NO	200 = 201 = 202
6.71	Unknown Ketone	8	0	0	0	0	8	5	0	8.75	3.26	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.71	2-Heptanone	8	3	0	9.17	4.72	8	3	0	9.17	4.49	16	10	0	14.6	5.33	0.9173	NO	200 = 201 = 202
7.02	C9 Cyclo Alkane	8	0	0	0	0	8	8	6.25	8.33	7.23	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
7.08	Unknown Alkane	8	0	0	0	0	8	5	0	6.25	2.4425	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.08	Unknown Alkane/C10 Alkyl Benzene	8	0	0	0	0	8	1	0	5.42	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.17	C10 Alkane	8	0	0	0	0	8	2	0	5.56	1	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.17	Unknown alkane	8	0	0	0	0	8	2	0	6.25	1	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.17	Dimethyl Octane isomer	8	0	0	0	0	8	2	0	6.25	0.94	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.22	Indene isomer	8	0	0	0	0	8	1	0	5	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.22	Unknown cycloalkene	8	0	0	0	0	8	1	0	5.42	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.22	Cycloc alkene/Unknown alkane	8	0	0	0	0	8	1	0	4.76	0.40	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.28	C10 alkane	8	0	0	0	0	8	3	0	11.3	3.16	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
7.28	Unknown Alkane	8	0	0	0	0	8	2	0	9.92	1.59	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.28	Dimethyl Octane isomer	8	0	0	0	0	8	3	0	10.4	3.58	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
7.32	Propylcyclohexane	8	0	0	0	0	8	8	9.17	13.8	11	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202

µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: Carbon Tube TICS (VOCs) (continued)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
7.39	Pinene Isomer	8	8	150	228	197.00	8	8	86.5	167	129.06	16	16	48.8	141	107.68	0.0157	YES	200 = 201 201 = 202
7.56	Unknown Alkane	8	0	0	0	0	8	8	9.17	12.1	9.92	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
7.61	Unknown alkane/Pinene isomer	8	0	0	0	0	8	4	0	11.7	5.32	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.61	Camphene	8	5	0	7.08	4.87	8	0	0	0	0	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 = 202
7.63	4-methyl nonane	8	0	0	0	0	8	8	12.9	32.1	20.45	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
7.66	Unknown alkane	8	0	0	0	0	8	5	0	20.4	9.69	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
7.66	C10 alkane	8	0	0	0	0	8	3	0	16.3	5.73	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.71	Benzaldehyde/Unknown	8	0	0	0	0	8	0	0	0	0	16	6	0	9.92	3.59	0.1811	NO	200 = 201 = 202
7.71	Methylethylbenzene Isomer/Unknown	8	0	0	0	0	8	2	0	20.4	6	16	1	0	5.83	0	0.1338	NO	200 = 201 = 202
7.71	Methylethylbenzene Isomer	8	6	0	16.3	7	8	6	0	19.2	12	16	0	0	0	0	0.0232	YES	200 = 201 201 = 202
7.74	3-methyl nonane	8	0	0	0	0	8	8	12.5	21.3	15.85	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
7.96	Pinene Isomer	8	8	56.3	72.9	62.73	8	8	41.7	65	54.18	16	16	19.8	55.4	38	0.0069	YES	200 = 201 201 = 202
8.02	2-Pentyl Furan/Unknown	8	0	0	0	0	8	1	0	12.9	1	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.02	2-Pentyl Furan/C10 cycloalkane	8	0	0	0	0	8	1	0	12.9	1.08	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.02	2-Pentyl Furan	8	8	5.42	9.17	7.29	8	6	0	15	10.98	16	8	0	13.8	4.68	0.1725	NO	200 = 201 = 202
8.14	Octanal	8	0	0	0	0	8	0	0	0	0	16	4	0	16.3	4.94	0.1811	NO	200 = 201 = 202

µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: Carbon Tube TICS (VOCs) (continued)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
8.26	Unknown alkane	8	0	0	0	0	8	4	0	5.42	2	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.42	Unknown alcohol	8	0	0	0	0	8	1	0	7.92	0.66	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.42	Ethylhexanol isomer	8	2	0	5.83	2.92	8	0	0	0	0	16	12	0	20	8.06	0.0417	YES	200 = 201 201 ≠ 202
8.42	Unknown alkane	8	0	0	0	0	8	4	0	9.17	6	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
8.43	Unknown Alkane/C10 Alkyl Benzene	8	0	0	0	0	8	3	0	9.17	2.12	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.48	Methyl-methylethylbenzene Isomer	8	8	7.14	8.75	7.96	8	8	12.5	16.3	14	16	10	0	11.3	6	0.0126	YES	200 = 201 201 ≠ 202
8.67	Indane	8	1	0	5	1.25	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.76	Unknown alkane	8	0	0	0	0	8	7	0	9.17	6.08	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
8.78	Unknown	8	0	0	0	0	8	0	0	0	0	16	4	0	8.33	2	0.3442	NO	200 = 201 = 202
8.78	Unknown Alkane/C10 Alkyl Benzene	8	8	7.08	10	8.99	8	6	0	20.1	9	16	5	0	12.9	2.95	0.0659	NO	200 = 201 = 202
8.79	Unknown alkane	8	0	0	0	0	8	2	0	12.5	2	16	1	0	5.42	0	0.2365	NO	200 = 201 = 202
8.92	Unknown alkane	8	0	0	0	0	8	5	0	16.4	8	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
8.92	C11 alkane	8	0	0	0	0	8	3	0	13.4	5	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.93	C10 Alcohol	8	7	0	18.8	7.97	8	0	0	0	0	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
9.54	Unknown Alkane/C10 Alkyl Benzene	8	0	0	0	0	8	2	0	5.33	1	16	0	0	0	0	0.2231	NO	200 = 201 = 202
9.7	Siloxane Compound	8	8	52.1	310	139.37	8	8	38.8	71.8	50.19	16	16	17.1	933	341	0.1939	NO	200 = 201 = 202
9.83	Unknown alkane	8	0	0	0	0	8	5	0	6.33	2.74	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
9.9	Acetic acid, phenylmethyl ester	8	1	0	4.17	0.35	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
9.92	Unknown alkane	8	0	0	0	0	8	4	0	5.04	2.24	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202

µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: Carbon Tube TICS (VOCs)
Analytical Method: NIOSH 1500, 1501, & 1003
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
9.98	C10H12 Benzene isomer	8	1	0	5	1.25	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
9.98	Methylindane isomer	8	1	0	4.58	1.15	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
9.99	Unknown alkane	8	0	0	0	0	8	1	0	4.79	1.20	16	0	0	0	0	0.2231	NO	200 = 201 = 202
9.99	Unknown	8	0	0	0	0	8	1	0	4.38	0	16	3	0	5.42	1	0.5558	NO	200 = 201 = 202
10.05	Unknown ester	8	0	0	0	0	8	0	0	0	0	16	1	0	5.42	0.68	0.6065	NO	200 = 201 = 202
10.15	C10 Alcohol	8	0	0	0	0	8	0	0	0	0	16	4	0	28.6	7	0.3442	NO	200 = 201 = 202
11.19	Unknown ester	8	1	0	5.83	0.49	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
11.19	C10 Cyclo Alcohol	8	2	0	7.14	1.64	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
11.19	Unknown	8	5	0	7.5	3.33	8	0	0	0	0	16	3	0	5.42	1.03	0.0839	NO	200 = 201 = 202
11.7	Unknown	8	1	0	6.25	0.52	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
11.7	Unknown alkane	8	0	0	0	0	8	1	0	4.54	0.38	16	0	0	0	0	0.2231	NO	200 = 201 = 202
11.7	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	8	7	0	26.3	15.92	8	2	0	8.54	3.52	16	12	0	18.3	9	0.1475	NO	200 = 201 = 202
11.84	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	8	8	12.5	50.8	31.08	8	8	6.83	15.5	10.40	16	16	0	32.9	23.00	0.0342	YES	200 ≠ 201 201 = 202
12.34	Cedr-8-ene	8	0	0	0	0	8	0	0	0	0	16	5	0	6.35	1.83	0.3442	NO	200 = 201 = 202
13.6	Unknown ester	8	8	5.42	7.5	6.74	8	0	0	0	0	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 = 202
13.6	Propanoic acid, 2-methyl-1-(1,1-dimethyl ethyl)-2-methyl-1,3-propanediyl ester	8	0	0	0	0	8	0	0	0	0	16	12	0	16.3	9	0.0151	YES	200 = 201 201 = 202

µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were conducted using SigmaStat version 3.01.

Summary of Outdoor Sampling Events in Louisiana: Carbon Tube TICS
Analytical Method: NIOSH 1500, 1501 & 1003

		Unit: 200			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)
7.39	Pinene Isomer	4	2	7.08	12.9
7.96	Pinene Isomer	4	1	5.42	5.42

µg/m3: micrograms per cubic meter
N: number of samples analyzed

Unit 201: 4 samples were collected resulting in no detects.
Unit 202: 4 samples were collected resulting in no detects.

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	Kruskal-Wallis Probability Value	Follow-up Multiple Comparisons?	Conclusions
4.02	Chlorodifluoromethane	4	4	9.7	55.4	35.10	4	1	0	6.37	1.59	8	2	0	5.98	0.84	0.0058	YES	200 ≠ 201 201 = 202
4.06	Propane	4	0	0	0	0	4	0	0	0	0	8	2	0	1.6	0.28	0.3442	NO	200 = 201 = 202
4.38	Propane, 2-methyl-	4	0	0	0	0	4	0	0	0	0	8	1	0	1.83	0.23	0.6065	NO	200 = 201 = 202
4.38	Acetaldehyde	4	4	1.96	3.66	2.92	4	4	1.28	4	3.07	8	7	0	71.9	11.46	0.8313	NO	200 = 201 = 202
4.64	Butane	4	3	0	0.984	0.67	4	0	0	0	0	8	0	0	0	0	0.0059	YES	200 = 201 201 = 202
5.1	Ethanol	4	4	2.57	11.2	7.33	4	3	0	1.54	0.86	8	6	0	3.65	1.39	0.0158	YES	200 ≠ 201 201 = 202
5.27	Acetonitrile	4	4	10.8	124	51.98	4	2	0	13.9	6.08	8	7	0	74.5	29.41	0.0890	NO	200 = 201 = 202
5.39	2-Propenal	4	0	0	0	0	4	0	0	0	0	8	1	0	0.521	0.07	0.6065	NO	200 = 201 = 202
5.93	Pentane	4	3	0	1.48	0.85	4	1	0	0.236	0.06	8	4	0	1.23	0.47	0.1893	NO	200 = 201 = 202
6.03	1,3-Butadiene, 2-methyl-	4	1	0	5.3	1.33	4	0	0	0	0	8	1	0	2.53	0.32	0.5454	NO	200 = 201 = 202
6.03	1,2-Pentadiene (isomer)	4	3	0	4.59	2.76	4	4	1.62	4.25	2.84	8	4	0	2.83	0.98	0.0796	NO	200 = 201 = 202
6.27	1,1-Dichloro-1-fluoroethane	4	0	0	0	0	4	0	0	0	0	8	3	0	2.62	0.65	0.1811	NO	200 = 201 = 202
6.28	2-Methyl-2-propanol	4	0	0	0	0	4	1	0	0.273	0.07	8	0	0	0	0	0.2231	NO	200 = 201 = 202
6.46	Pentane	4	0	0	0	0	4	0	0	0	0	8	3	0	0.953	0.34	0.1811	NO	200 = 201 = 202
6.56	1,3-Pentadiene isomer	4	0	0	0	0	4	0	0	0	0	8	1	0	2.86	0.36	0.6065	NO	200 = 201 = 202
6.57	Methyl butadiene isomer	4	0	0	0	0	4	0	0	0	0	8	2	0	4.45	0.99	0.3442	NO	200 = 201 = 202
6.91	1-Propanol	4	0	0	0	0	4	0	0	0	0	8	1	0	0.7	0.09	0.6065	NO	200 = 201 = 202

N: number of samples analyzed
ppbv: parts per billion by volume

**Averages were computed usine zeros in place of compounds not detected.
Statistical comparisons were performed with alpha = 0.05.
Kruskal-Wallis tests were computed using SAS® version 9.0 for Windows.
If the computed probabiluty-value was <0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were cunducted using SigmaStat version 3.01 for Windows.

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS (continued)
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	Kruskal-Wallis Probability Value	Follow-up Multiple Comparisons?	Conclusions
7.11	Carbon Disulfide	4	0	0	0	0	4	0	0	0	0	8	2	0	0.853	0.20	0.3442	NO	200 = 201 = 202
7.31	2,3-Butanedione	4	1	0	0.99	0.25	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
7.43	Butanal	4	2	0	1.01	0.45	4	3	0	1.61	0.88	8	7	0	1.21	0.80	0.6030	NO	200 = 201 = 202
8.48	1-Propanol, 2-methyl	4	0	0	0	0	4	0	0	0	0	8	1	0	0.59	0.07	0.6065	NO	200 = 201 = 202
9.04	Isobutyl alcohol	4	0	0	0	0	4	0	0	0	0	8	5	0	1.3	0.65	0.0384	YES	200 = 201 201 = 202
9.31	1-Butanol	4	3	0	2.12	1.14	4	0	0	0	0	8	7	0	1.49	0.87	0.0437	YES	200 = 201 201 = 202
9.95	Pentanal	4	4	1.85	3.19	2.63	4	4	0.961	5.6	3.50	8	8	1.06	3.1	2.11	0.2575	NO	200 = 201 = 202
11.78	1-Pentanol	4	4	1.05	1.61	1.33	4	3	0	1.75	0.84	8	7	0	1.01	0.67	0.0716	NO	200 = 201 = 202
12.4	Hexanal	4	4	9.36	14.4	11.75	4	4	2.12	17	10.73	8	8	2.83	11.2	6.61	0.0997	NO	200 = 201 = 202
12.78	n-Butyl acetate	4	1	0	0.754	0	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
12.98	Furfural	4	0	0	0	0	4	0	0	0	0	8	5	0	1.16	0.49	0.0384	YES	200 = 201 201 = 202
13.41	Heptane, 2,4-dimethyl	4	2	0	0.646	0.32	4	0	0	0	0	8	2	0	0.628	0.15	0.2060	NO	200 = 201 = 202
14.38	2-Heptanone (C7H14O Ketone)	4	3	0	1.18	0.74525	4	0	0	0	0	8	7	0	1.88	1.04	0.0412	YES	200 = 201 201 ≠ 202
14.43	3-methyl octane	4	0	0	0	0	4	3	0	1.41	0.78	8	0	0	0	0	0.0059	YES	200 = 201 201 = 202
14.47	Cyclohexanone	4	0	0	0	0	4	0	0	0	0	8	1	0	0.454	0.06	0.6065	NO	200 = 201 = 202
14.61	Heptanal	4	0	0	0	0	4	0	0	0	0	8	3	0	1.99	0.62	0.1811	NO	200 = 201 = 202
14.97	Nonane	4	0	0	0	0	4	4	1.3	9.95	6.27	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
15.24	Bromofluorobenzene isomer	4	0	0	0	0	4	0	0	0	0	8	1	0	0.806	0.10	0.6065	NO	200 = 201 = 202
15.68	Dimethyl octane isomer	4	0	0	0	0	4	3	0	1.88	1.16	8	0	0	0	0	0.0059	YES	200 = 201 201 = 202
15.7	6-Methyl-2-heptanone	4	0	0	0	0	4	0	0	0	0	8	1	0	0.761	0.10	0.6065	NO	200 = 201 = 202

N: number of samples analyzed
ppbv: parts per billion by volume

**Averages were computed usine zeros in place of compounds not detected.
Statistical comparisons were performed with alpha = 0.05.
Kruskal-Wallis tests were computed using SAS® version 9.0 for Windows.
If the computed probabiluty-value was <0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were cunducted using SigmaStat version 3.01 for Windows.

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS (continued)
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	Kruskal-Wallis Probability Value	Follow-up Multiple Comparisons?	Conclusions
15.73	Propyl Cyclohexane	4	0	0	0	0	4	3	0	1.72	0.91	8	0	0	0	0	0.0059	YES	200 = 201 201 = 202
15.8	Benzaldehyde	4	0	0	0	0	4	1	0	10.4	3	8	0	0	0	0	0.2231	NO	200 = 201 = 202
15.83	alpha Pinene	4	4	0	54.9	33.825	4	4	2.68	24.7	14.3375	8	8	5.47	22	13.79	0.0526	NO	200 = 201 = 202
16.09	Ethyl toluene isomer	4	0	0	0	0.00	4	4	0.333	2.23	1.38025	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
16.15	Camphene	4	0	0	0	0	4	1	0	0.3	0.08	8	0	0	0	0	0.2231	NO	200 = 201 = 202
16.18	4-methyl nonane	4	0	0	0	0	4	1	0	0.232	0.06	8	0	0	0	0	0.2231	NO	200 = 201 = 202
16.25	6-Methyl-5-hepten-2-one isomer	4	0	0	0	0	4	0	0	0	0	8	3	0	1.16	0.40	0.1811	NO	200 = 201 = 202
16.36	3-methyl nonane	4	0	0	0	0	4	4	0.386	3.3	2	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
16.47	Ethyl toluene isomer	4	1	0	0.695	0.17375	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
16.58	Octanal	4	4	3.04	5.07	4.07	4	4	0.333	5.5	3.341	8	6	0	3.79	1.76	0.0625	NO	200 = 201 = 202
16.65	beta Pinene	4	4	6.11	10.8	8.1875	4	3	0	7.43	4.28	8	7	0	11.6	3.79	0.0903	NO	200 = 201 = 202
16.86	Decane	4	0	0	0	0	4	4	2.13	17.2	10.34	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
17.2	delta Carene	4	4	2.65	5.62	4.19	4	4	0.446	3.2	1.87	8	7	0	11.2	4.91	0.1850	NO	200 = 201 = 202
17.28	Isopropyl toluene isomer	4	4	0.964	1.38	1	4	4	0.51	3.54	2	8	4	0	1.81	0.81	0.2263	NO	200 = 201 = 202
17.28	Ethyl dimethyl benzene isomer	4	0	0	0	0	4	0	0	0	0	8	3	0	1.27	0.32	0.1811	NO	200 = 201 = 202
17.41	Hydroxy benzaldehyde isomer	4	0	0	0	0.00	4	1	0	1.37	0.343	8	0	0	0	0	0.2231	NO	200 = 201 = 202
17.47	l-Limonene isomer	4	4	4.17	10.2	7.3075	4	3	0	3.58	1.82	8	8	1.06	5.09	2.74	0.0218	YES	200 ≠ 201 201 = 202
17.51	alpha-Pinene	4	0	0	0	0	4	2	0	4.18	2.01	8	0	0	0	0	0.0408	YES	200 = 201 201 = 202
17.51	Phellandrene	4	0	0	0	0	4	0	0	0	0	8	1	0	2.65	0.33	0.6065	NO	200 = 201 = 202
17.56	Indane	4	2	0	0.921	0	4	0	0	0	0	8	0	0	0	0	0.0408	YES	200 = 201 201 = 202
17.62	Butyl cyclohexane isomer	4	0	0	0	0	4	4	0.243	1.86	1.132	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202

N: number of samples analyzed
ppbv: parts per billion by volume

**Averages were computed usine zeros in place of compounds not detected.
Statistical comparisons were performed with alpha = 0.05.
Kruskal-Wallis tests were computed using SAS® version 9.0 for Windows.
If the computed probabiluty-value was <0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were cunducted using SigmaStat version 3.01 for Windows.

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS (continued)
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	Kruskal-Wallis Probability Value	Follow-up Multiple Comparisons?	Conclusions
17.8	2-Ethyl hexanol	4	0	0	0	0.00	4	0	0	0	0	8	1	0	0.627	0.08	0.6065	NO	200 = 201 = 202
17.86	2-Methyl benzaldehyde isomer	4	0	0	0	0	4	0	0	0	0	8	1	0	0.536	0.07	0.6065	NO	200 = 201 = 202
17.88	5-Methyl decane	4	0	0	0	0	4	3	0	1.69	1.00	8	0	0	0	0	0.0059	YES	200 = 201 201 = 202
17.93	Diisopropyl disulfide	4	0	0	0	0	4	0	0	0	0	8	1	0	15.4	1.93	0.6065	NO	200 = 201 = 202
17.94	4-Methyl decane	4	0	0	0	0	4	3	0	1.63	1	8	0	0	0	0	0.0059	YES	200 = 201 201 = 202
17.95	Decane, dimethyl- isomer	4	0	0	0	0	4	0	0	0	0	8	2	0	0.852	0.21	0.3442	NO	200 = 201 = 202
17.93	gamma Terpinene	4	1	0	1.02	0.26	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
17.95	Heptadecane	4	1	0	0.789	0.19725	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
17.95	Decane, 2,4-dimethyl	4	1	0	0.706	0.1765	4	0	0	0	0	8	1	0	0.718	0.09	0.6232	NO	200 = 201 = 202
18	2-Methyl decane	4	0	0	0	0	4	4	0.283	2.13	1.33	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
18.06	Dodecane	4	1	0	0.742	0	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
18.07	Unknown	4	0	0	0	0	4	0	0	0	0	8	1	0	0.63	0.08	0.6065	NO	200 = 201 = 202
18.08	2-Methyl-1-Heptene	4	0	0	0	0.00	4	0	0	0	0	8	1	0	0.329	0.04	0.6065	NO	200 = 201 = 202
18.08	4-Methyl benzaldehyde isomer	4	0	0	0	0	4	0	0	0	0	8	1	0	0.458	0.06	0.6065	NO	200 = 201 = 202
18.12	3-Methyl decane	4	0	0	0	0	4	4	0.265	1.93	1.13	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
18.17	Nonanone	4	0	0	0	0	4	0	0	0	0	8	1	0	0.29	0.04	0.6065	NO	200 = 201 = 202

N: number of samples analyzed
ppbv: parts per billion by volume

**Averages were computed usine zeros in place of compounds not detected.
Statistical comparisons were performed with alpha = 0.05.
Kruskal-Wallis tests were computed using SAS® version 9.0 for Windows.
If the computed probabiluty-value was <0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were cunducted using SigmaStat version 3.01 for Windows.

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	Kruskal-Wallis Probability Value	Follow-up Multiple Comparisons?	Conclusions
18.2	Ethyl xylene isomer	4	1	0	0.657	0	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
18.2	Decahydro naphthalene	4	0	0	0	0	4	1	0	0.744	0.186	8	0	0	0	0	0.2231	NO	200 = 201 = 202
18.38	Nonanal	4	4	5.35	9.4	7.28	4	3	0	5.48	3.675	8	8	1.22	4.64	3.15	0.0182	YES	200 = 201 201 = 202
18.46	1-Phenyl-1-butene	4	1	0	1.04	0.26	4	0	0	0	0	8	0	0	0	0	0.2231	NO	200 = 201 = 202
18.47	alpha Terpinene	4	2	0	1.49	0.5435	4	0	0	0	0	8	0	0	0	0	0.0408	YES	200 = 201 201 = 202
18.58	Undecane	4	3	0	0.795	0.5635	4	4	1.77	12.8	7.74	8	5	0	0.766	0.39	0.0095	YES	200 = 201 201 ≠ 202
18.67	3,7-Dimethyl decane	4	0	0	0	0	4	0	0	0	0	8	1	0	0.622	0.08	0.6065	NO	200 = 201 = 202
19.66	Acetic acid, isoamyl ester	4	0	0	0	0	4	0	0	0	0	8	1	0	0.67	0.08	0.6065	NO	200 = 201 = 202
19.94	Trichloro benzene isomer	4	0	0	0	0.00	4	1	0	1.2	0.3	8	0	0	0	0	0.2231	NO	200 = 201 = 202
20.03	Methoxy propenyl benzene isomer	4	0	0	0	0	4	1	0	0.962	0.24	8	4	0	1.3	0.57	0.2065	NO	200 = 201 = 202
20.03	Methoxy propenyl benzene isomer + Nonanal isomer	4	4	0.636	2.45	1.22925	4	0	0	0	0	8	0	0	0	0	0.0007	YES	200 ≠ 201 201 = 202
20.03	Methoxy propenyl benzene isomer / Unknown	4	0	0	0	0	4	0	0	0	0	8	1	0	0.836	0.10	0.6065	NO	200 = 201 = 202
20.04	Decanal	4	0	0	0	0	4	0	0	0	0	8	1	0	0.801	0.10	0.6065	NO	200 = 201 = 202
20.17	Dodecane	4	0	0	0	0	4	4	0.133	2.24	1.38325	8	1	0	0.47	0.06	0.0030	YES	200 ≠ 201 201 ≠ 202
20.86	Dodecane / Naphthalene	4	0	0	0	0.00	4	0	0	0	0	8	3	0	0.991	0.30	0.1811	NO	200 = 201 = 202

N: number of samples analyzed
ppbv: parts per billion by volume

**Averages were computed usine zeros in place of compounds not detected.
Statistical comparisons were performed with alpha = 0.05.
Kruskal-Wallis tests were computed using SAS® version 9.0 for Windows.
If the computed probabiluty-value was <0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians) were cunducted using SigmaStat version 3.01 for Windows.

Summary of Outdoor Air Sampling Events in Louisiana: EPA TO 15 TICS

		Unit: 200				Unit: 201				Unit: 202			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)
4.02	Chlorodifluoromethane	4	4	0.636	5.64	4	2	0	6.98	4	0	0	0
4.06	Propene	4	0	0	0	4	1	0	1.58	4	1	0	2.38
4.07	Cyclopropane / Unknown	4	0	0	0	4	0	0	0	4	1	0	1.02
4.38	Propane, 2-methyl-	4	1	0	4.38	4	0	0	0	4	0	0	0
4.38	Acetaldehyde	4	3	0	0.91	4	4	2.62	3.62	4	3	0	2.41
4.64	Butane	4	4	0.255	0.612	4	4	0.199	0.886	4	2	0	0.353
4.81	2-Methyl pentane	4	0	0	0	4	0	0	0	4	1	0	1.24
5.1	Ethanol	4	3	0	0.801	4	3	0	0.762	4	1	0	0.521
5.27	Acetonitrile	4	1	0	0.894	4	0	0	0	4	3	0	0.795
5.39	2-Propenal	4	0	0	0	4	2	0	0.309	4	0	0	0
5.93	Pentane	4	4	0.295	0.801	4	3	0	0.87	4	4	0.439	1.66
6.03	1,3-Butadiene, 2-methyl-	4	0	0	0	4	0	0	0	4	2	0	5.13
6.03	1,2-Pentadiene (isomer)	4	4	2.97	6.93	4	4	1.3	5.13	4	2	0	1.36
6.28	2-Methyl-2-propanol	4	0	0	0	4	1	0	0.233	4	1	0	1.03
6.91	1-Propanol	4	0	0	0	4	1	0	0.378	4	0	0	0
6.99	2-Butenal	4	1	0	0.273	4	1	0	0.239	4	2	0	0.54
6.99	2-Methyl-2-propenal	4	2	0	0.254	4	0	0	0	4	0	0	0
7.43	Butanal	4	0	0	0	4	2	0	0.79	4	2	0	0.546
8.48	1-Propanol, 2-methyl	4	0	0	0	4	1	0	0.192	4	0	0	0
8.73	Butenal isomer	4	0	0	0	4	1	0	0.177	4	0	0	0
9.31	1-Butanol	4	0	0	0	4	0	0	0	4	1	0	0.212
9.95	Pentanal	4	1	0	0.226	4	3	0	0.415	4	2	0	0.387
10.61	3-Methyl butanal	4	0	0	0	4	0	0	0	4	1	0	0.291
12.4	Hexanal	4	1	0	0.345	4	4	0.298	0.431	4	3	0	0.419
12.98	Furfural	4	0	0	0	4	0	0	0	4	1	0	0.253

ppbv = parts per billion by volume
N: number of samples analyzed

Summary of Outdoor Air Sampling Events in Louisiana: EPA TO 15 TICS

		Unit: 200				Unit: 201				Unit: 202			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)
14.47	Cyclohexanone	4	1	0	0.438	4	0	0	0	4	0	0	0
14.61	Heptanal	4	1	0	0.183	4	3	0	0.402	4	3	0	0.326
14.67	Methyl isopropyl disulfide	4	0	0	0	4	1	0	0.346	4	0	0	0
15.24	Bromofluorobenzene isomer	4	0	0	0	4	1	0	0.631	4	1	0	0.3
15.8	Benzaldehyde	4	0	0	0	4	2	0	1.5	4	2	0	1.11
15.83	alpha Pinene	4	4	0.717	1.48	4	2	0	1.4	4	2	0	0.492
16.25	6-Methyl-5-hepten-2-one isomer	4	1	0	0.433	4	0	0	0	4	2	0	0.748
16.47	Sabinene	4	3	0	0.375	4	0	0	0	4	0	0	0
16.58	Octanal	4	2	0	0.298	4	3	0	0.466	4	3	0	0.64
16.65	beta Pinene	4	4	0.456	0.907	4	1	0	0.238	4	0	0	0
17.21	Bis methyl ethyl disulfide	4	0	0	0	4	1	0	15.3	4	0	0	0
17.47	l-Limonene isomer	4	3	0	0.362	4	0	0	0	4	0	0	0
17.48	3,3,5-Trimethyl cyclohexanone	4	0	0	0	4	1	0	1.27	4	1	0	0.431
17.76	Acetophenone	4	0	0	0	4	2	0	0.296	4	2	0	0.193
18.38	Nonanal	4	4	0.327	1.1	4	3	0	0.938	4	4	0.463	1.21
18.38	Nonanal / C7 Cycloalkane	4	0	0	0	4	1	0	0.61	4	0	0	0
19.54	Methyl-cyclopropyl benzene	4	1	0	0.172	4	0	0	0	4	0	0	0
20.04	Decanal	4	3	0	0.402	4	2	0	0.394	4	0	0	0
20.17	Dodecane	4	1	0	0.242	4	0	0	0	4	0	0	0
20.74	Oxybis-(dichloro) propane isomer	4	2	0	0.438	4	0	0	0	4	0	0	0
21.1	1H-Indene, 2,3-dihydro-1,2-dimethyl isomer	4	1	0	0.187	4	0	0	0	4	0	0	0
21.36	Tetrahydro-naphthalene isomer	4	1	0	0.385	4	0	0	0	4	0	0	0

ppbv = parts per billion by volume
N: number of samples analyzed

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS (continued)
Air Conditioning: On

		Unit: 200					Unit: 201					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	WRS Probability Value	Conclusion
4.02	Chlorodifluoromethane	4	4	12.7	47.2	23.08	4	1	0	1.77	0.4425	0.0265	100 ≠ 101
4.38	Acetaldehyde	4	4	1.56	2.69	2.11	4	4	2.55	5.64	3.815	0.0606	100 = 101
4.56	Unknown	4	1	0	0.377	0.094	4	0	0	0	0	0.4533	100 = 101
4.64	Butane	4	2	0	0.901	0.45	4	0	0	0	0	0.1859	100 = 101
5.1	Ethanol	4	4	2.22	5.27	3.57	4	4	0.909	5.34	2.952	0.8852	100 = 101
5.27	Acetonitrile	4	4	4.44	12.1	8.04	4	4	3.92	22.3	10.10	1.0000	100 = 101
5.39	2-Propenal	4	1	0	0.482	0.12	4	1	0	0.948	0.237	1.0000	100 = 101
5.93	Pentane	4	4	0.299	1.23	0.80	4	1	0	0.747	0.19	0.1038	100 = 101
6.03	1,3-Butadiene, 2-methyl-	4	1	0	1.58	0.395	4	0	0	0	0	0.4533	100 = 101
6.03	1,2-Pentadiene (isomer)	4	3	0	3.57	2.09	4	4	2.05	5.9	4.12	0.3123	100 = 101
6.28	2-Methyl-2-propanol	4	0	0	0	0	4	0	0	0	0	N/A	N/A
6.99	2-Butenal	4	0	0	0	0	4	1	0	2.34	0.59	0.4533	100 = 101
7.43	Butanal	4	3	0	0.8	0.42	4	3	0	1.34	0.81	0.2454	100 = 101
8.48	1-Propanol, 2-methyl	4	1	0	0.379	0.09	4	2	0	0.917	0.43	0.4084	100 = 101
9.31	1-Butanol	4	4	0.449	1.05	0.72	4	2	0	1.81	0.6155	0.6631	100 = 101
9.95	Pentanal	4	4	0.74	1.85	1.315	4	4	2.21	6.83	4.05	0.0304	100 ≠ 101
11.78	1-Pentanol	4	4	0.413	0.924	0.592	4	4	1.04	2.84	1.58	0.0304	100 ≠ 101
12.4	Hexanal	4	4	3.44	7.64	5.46	4	4	9	29.6	16.43	0.0304	100 ≠ 101
12.78	n-Butyl acetate	4	1	0	0.335	0.08	4	0	0	0	0	0.4533	100 = 101
13.25	Trichloropropane isomer	4	1	0	0.369	0.09	4	0	0	0	0	0.4533	100 = 101
13.41	Heptane, 2,4-dimethyl	4	1	0	0.377	0.094	4	0	0	0	0	0.4533	100 = 101
14.38	2-Heptanone (C7H14O Ketone)	4	3	0	0.946	0.39	4	3	0	1.25	0.64	0.5614	100 = 101
14.47	Cyclohexanone	4	1	0	2.06	0.52	4	0	0	0	0	0.4533	100 = 101
14.88	Trichloropropane isomer	4	2	0	0.706	0.34	4	0	0	0	0	0.1859	100 = 101
14.97	Nonane	4	0	0	0	0	4	4	1.2	3.35	2.345	0.0211	100 ≠ 101
15.68	Dimethyl octane isomer	4	0	0	0	0	4	3	0	1.11	0.64	0.0689	100 = 101
15.83	alpha Pinene	4	4	5.15	37.3	22.113	4	4	14	34.9	21.98	0.6650	100 = 101
16.09	Ethyl toluene isomer	4	0	0	0	0	4	3	0	0.923	0.586	0.0689	100 = 101
16.36	3-methyl nonane	4	0	0	0	0	4	4	0.516	1.29	0.971	0.0211	100 ≠ 101
16.58	Octanal	4	4	1.25	3.37	1.883	4	4	3.36	9.1	4.930	0.0606	100 = 101

WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Indoor Air Sampling Events in Louisiana: EPA TO 15 TICS
Air Conditioning: On

		Unit: 200					Unit: 201					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	N	Number of Detects	Minimum Detected (ppbv)	Maximum (ppbv)	Average** (ppbv)	WRS Probability Value	Conclusion
16.65	beta Pinene	4	4	1.69	6.35	4	4	3	0	8.94	5.27	0.6650	100 = 101
16.65	beta Pinene / Unknown	4	0	0	0	0	4	1	0	9.18	2.295	0.4533	100 = 101
16.86	Decane	4	0	0	0	0.000	4	4	2	5.76	4.16	0.0211	100 ≠ 101
17.2	delta Carene	4	4	0.868	3.47	3	4	4	1.91	2.92	2.435	0.6650	100 = 101
17.28	Isopropyl toluene isomer	4	4	0.306	0.83	1	4	4	1.11	2.19	1.738	0.0304	100 ≠ 101
17.47	l-Limonene isomer	4	3	0	3.68	2.648	4	4	2.08	3.78	2.710	0.8852	100 = 101
17.51	alpha-Pinene	4	0	0	0	0	4	2	0	3.04	1.52	0.1859	100 = 101
17.51	Phellandrene	4	0	0	0	0	4	1	0	1.43	0.358	0.4533	100 = 101
17.56	Indane	4	1	0	0.567	0	4	0	0	0	0.000	0.4533	100 = 101
17.62	Butyl cyclohexane isomer	4	0	0	0	0.000	4	1	0	0.587	0.147	0.4533	100 = 101
17.83	Isopropyl toluene isomer	4	1	0	0.388	0	4	0	0	0	0.00	0.4533	100 = 101
17.83	Ethyl dimethyl benzene isomer	4	1	0	0.436	0.109	4	0	0	0	0	0.4533	100 = 101
17.88	5-Methyl decane	4	0	0	0	0	4	1	0	0.777	0.19	0.4533	100 = 101
17.94	4-Methyl decane	4	0	0	0	0	4	1	0	0.919	0.23	0.4533	100 = 101
17.95	Nonadecane	4	1	0	0.292	0.07	4	0	0	0	0	0.4533	100 = 101
17.95	Decane, dimethyl- isomer	4	1	0	0.485	0.121	4	0	0	0	0	0.4533	100 = 101
17.95	Decane, 2,4-dimethyl	4	1	0	0.463	0.12	4	0	0	0	0	0.4533	100 = 101
18	2-Methyl decane	4	0	0	0	0	4	3	0	1.09	0.63	0.0689	100 = 101
18.07	Unknown hydrocarbon	4	1	0	0.418	0.10	4	0	0	0	0	0.4533	100 = 101
18.07	Dimethyl octane isomer	4	1	0	0.451	0.113	4	0	0	0	0	0.4533	100 = 101
18.12	3-Methyl decane	4	0	0	0	0	4	1	0	0.955	0.24	0.4533	100 = 101
18.17	Nonanone	4	0	0	0	0	4	2	0	1.01	0.38	0.1859	100 = 101
18.2	Decahydro naphthalene	4	0	0	0	0	4	2	0	0.944	0.38	0.1859	100 = 101
18.38	Nonanal	4	4	1.37	8.08	4	4	4	2.87	12.2	6.170	0.5614	100 = 101
18.46	Benzene, 2-butenyl	4	1	0	0.815	0.20	4	0	0	0	0	0.4533	100 = 101
18.47	alpha Terpinene	4	2	0	0.783	0.30475	4	0	0	0	0.00	0.1859	100 = 101
18.58	Undecane	4	4	0.299	0.558	0.44	4	4	2.2	6.01	4	0.0304	100 ≠ 101
19.29	Benzyl acetate	4	1	0	0.297	0.074	4	0	0	0	0	0.4533	100 = 101
19.54	1-Phenyl-1-butene	4	1	0	0.372	0	4	0	0	0	0.00	0.4533	100 = 101
20.03	Methoxy propenyl benzene isomer	4	0	0	0	0	4	2	0	1.5	0.54	0.1859	100 = 101
20.03	Methoxy propenyl benzene isomer + Nonanal isomer	4	1	0	1.22	0.305	4	0	0	0	0	0.4533	100 = 101
20.04	Decanal	4	1	0	0.929	0.23	4	0	0	0	0	0.4533	100 = 101
20.17	Dodecane	4	0	0	0	0	4	2	0	1.24	0.54	0.1859	100 = 101
20.74	Oxybis-(dichloro) propane isomer	4	1	0	0.61	0.15	4	0	0	0	0	0.4533	100 = 101

WRS: Wilcoxon-Rank-Sum test
N: number of samples analyzed

**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
3.57	Unknown alcohol	8	0	0	0	0	8	1	2.06	2.06	0.17	16	0	0	0	0.00	0.2231	NO	200 = 201 = 202
3.63	Toluene	8	1	2.15	2.15	0.18	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
4.1	Hexanal	8	8	6.35	19	12.73	8	8	18.5	34.7	25.46	16	16	2.75	8.43	6.49	0.00358	YES	200 = 201 201 ≠ 202
4.32	Acetic acid, butyl ester	8	1	1.88	1.88	0.16	8	0	0	0	0.00	16	0	0	0	0	0.2231	NO	200 = 201 = 202
4.46	C9 Alkane	8	1	2.41	2.41	0.20	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
4.46	Heptane, 2,4-dimethyl	8	1	2.53	2.53	0.21	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
4.67	Dimethylheptane isomer	8	0	0	0	0	8	1	2.84	2.84	0.24	16	0	0	0	0	0.2231	NO	200 = 201 = 202
4.76	Unknown	8	1	2.32	2.32	0.19	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
4.78	2-Pentanone, 4-hydroxy-4-methyl	8	0	0	0	0	8	0	0	0	0	16	3	2.22	3.43	1.10	0.1811	NO	200 = 201 = 202
5.13	Ethylbenzene	8	6	5.53	6.03	3.83	8	0	0	0	0	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
5.13	Ethylbenzene/Unknown	8	1	6.07	6.07	0.51	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
5.13	C9 Alkane	8	0	0	0	0	8	4	2.48	14.1	5.54	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
5.13	C9 Alkane/Ethyl Benzene	8	0	0	0	0	8	3	8.61	13.5	2.76	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
5.19	Unknown	8	1	2.3	2.3	0.19	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
5.25	Xylene isomer/C9 Alkane	8	0	0	0	0	8	5	7.17	19.4	9.53	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
5.25	Unknown alkane/Xylene isomer	8	0	0	0	0	8	3	14.8	19.1	4.1	16	0	0	0	0	0.2231	NO	200 = 201 = 202
5.26	Xylene isomer	8	8	5.96	13.8	10.94	8	0	0	0	0	16	1	2.02	2.02	0.25	0.0018	YES	200 ≠ 201 201 = 202
5.53	2-Heptanone	8	8	3.66	4.87	4.295	8	1	7.3	7.3	0.61	16	9	2.39	6.88	3.41	0.0687	NO	200 = 201 = 202
5.54	C9 Cyclohexane isomer/Unknown	8	0	0	0	0	8	1	9.57	9.57	0.80	16	0	0	0	0	0.2231	NO	200 = 201 = 202
5.6	Styrene	8	2	2.64	2.69	0.44	8	1	4.26	4.26	0.36	16	0	0	0	0	0.3413	NO	200 = 201 = 202
5.65	Xylene isomer	8	7	6.22	8.33	5.57	8	0	0	0	0	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
5.69	Nonane	8	0	0	0	0	8	8	29.6	77.7	56.03	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
5.72	Heptanal	8	8	7.18	10.4	8.34	8	0	0	0	0	16	11	2.38	4.22	2.76	0.0024	YES	200 ≠ 201 201 = 202

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS (continued)
Air Conditioning: OFF
W.A. 0-393

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
5.78	Ethanol, 2-butoxy	8	6	4.14	6.73	2.72	8	0	0	0	0	16	11	2.8	5.55	3.05	0.0719	NO	200 = 201 = 202
6.08	Unknown/C10 Alkane	8	0	0	0	0	8	5	5.38	9.59	5.06	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
6.22	C10 Alkane/C9 Cycloalkane isomer	8	0	0	0	0	8	6	10.2	18.6	11.88	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
6.22	Unknown/C10 Alkane	8	0	0	0	0	8	1	17.3	17.3	1.44	16	0	0	0	0.00	0.2231	NO	200 = 201 = 202
6.22	C9 Cycloalkane	8	0	0	0	0	8	1	16.6	16.6	1.38	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.3	Pinene isomer	8	8	87.2	129	102.34	8	8	56.1	99.4	82.39	16	16	17	64.3	45.29	0.0022	YES	200 = 201 201 = 202
6.35	Unknown Alkane/Unknown	8	0	0	0	0	8	1	3.37	3.37	0.28	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.55	Unknown	8	0	0	0	0	8	8	8.19	14.4	10.94	16	1	1.96	1.96	0.25	0.0018	YES	200 ≠ 201 201 ≠ 202
6.56	Camphene/Unknown	8	5	3.35	5.5	2.00	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.56	Pinene isomer/Unknown	8	0	0	0	0	8	0	0	0	0	16	1	2.43	2.43	0.30	0.6065	NO	200 = 201 = 202
6.59	Ethanol, 2,2'-oxybis-/C9 Alkyl benzene	8	3	2.4	4.46	1.515	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.6	Ethanol, 2,2'-oxybis-	8	1	5.58	5.58	1.395	8	0	0	0	0.00	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.64	Methyl nonane isomer	8	0	0	0	0	8	5	9.03	18.2	6.95	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
6.64	Dimethyl octane isomer	8	0	0	0	0	8	3	15.2	20	6.83	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.65	Unknown organic acid	8	0	0	0	0	8	0	0	0	0	16	4	2.18	4.25	0.97	0.0875	NO	200 = 201 = 202
6.66	Heptanoic acid	8	0	0	0	0	8	0	0	0	0	16	1	4.91	4.91	0.20	0.6065	NO	200 = 201 = 202
6.68	C10 Alkane/Benzaldehyde	8	0	0	0	0	8	2	27.5	29.8	9.74	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.68	C10 Alkane	8	0	0	0	0	8	1	25.3	25.3	2.11	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.68	Unknown alkane	8	0	0	0	0	8	1	29.7	29.7	2.48	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.69	Benzaldehyde/C9 Alkyl benzene	8	6	8.99	12.8	5.37	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.69	Benzaldehyde/Unknown	8	0	0	0	0	8	4	16.7	27	9.88	16	15	3.46	15.1	8.54	0.0421	YES	200 = 201 201 = 202
6.7	C9 Alkyl benzene	8	2	8.97	11.2	5.04	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.74	Heptanol	8	7	4.64	7.23	4.71	8	7	7.74	11.9	9.39	16	0	0	0	0	0.0022	YES	200 = 201 201 ≠ 202
6.74	Unknown	8	1	7.48	7.48	1.87	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS (continued)
Air Conditioning: OFF
W.A. 0-393

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
6.79	Methyl nonane isomer	8	0	0	0	0	8	7	12	30.9	22.5	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
6.79	C9 Alkane	8	0	0	0	0	8	1	23.3	23.3	1.94	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.81	C9 Alkyl benzene	8	1	2.11	2.11	0.18	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
6.89	Phenol/Unknown	8	5	3.94	5.3	2.02	8	8	7.25	12.4	9.42	16	0	0	0	0	0.0019	YES	200 = 201 201 ≠ 202
6.89	Phenol	8	2	5.42	5.62	2.76	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
6.9	Pinene isomer/Unknown	8	1	4.95	4.95	0.41	8	1	23.6	23.6	1.97	16	0	0	0	0	0.3413	NO	200 = 201 = 202
6.98	Pinene isomer	8	8	28.4	42.7	35.27	8	7	25.6	38.9	34.06	16	16	4.64	28.3	19.21	0.0048	YES	200 = 201 201 ≠ 202
7.02	C10 Cyclohexane	8	0	0	0	0.00	8	1	5.11	5.11	0.43	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.02	Cyclohexane, 1-methyl-3-propyl	8	0	0	0	0	8	1	8.73	8.73	0.73	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.07	Pinene isomer	8	0	0	0	0	8	0	0	0	0	16	4	2.45	7.66	1.78	0.1811	NO	200 = 201 = 202
7.1	Siloxane compound/Pinene isomer	8	1	12	12	1	8	0	0	0	0	16	0	0	0	0.00	0.2231	NO	200 = 201 = 202
7.1	Unknown	8	5	4.82	10.4	4.45	8	1	4.56	4.56	0.38	16	0	0	0	0	0.0167	YES	200 = 201 201 = 202
7.1	Furan, 2-pentyl-	8	0	0	0	0	8	4	4.1	10.9	4.52	16	5	3.68	7.69	1.62	0.2075	NO	200 = 201 = 202
7.11	Siloxane compound/Unknown	8	2	8.04	12.5	3.05	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.12	Pinene isomer/Unknown	8	0	0	0	0	8	0	0	0	0	16	1	5.65	5.65	0.71	0.6065	NO	200 = 201 = 202
7.2	C9 Alkyl benzene/Unknown	8	8	7.19	16	13.48	8	0	0	0	0	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 = 202
7.25	Unknown Aldehyde	8	0	0	0	0	8	0	0	0	0	16	1	2.86	2.86	0.12	0.6065	NO	200 = 201 = 202
7.21	Decane	8	0	0	0	0	8	8	34.6	111	86.11	16	0	0	0	0	0.0007	YES	200 ≠ 201 201 ≠ 202
7.26	Octanal	8	8	11.6	27.3	20.92	8	8	18.3	43.8	33.64	16	12	5.52	15.8	8.99	0.0021	YES	200 = 201 201 ≠ 202
7.39	Pinene isomer/Unknown	8	0	0	0	0.00	8	0	0	0	0	16	1	1.85	1.85	0.23	0.6065	NO	200 = 201 = 202
7.41	Unknown	8	2	4.5	4.9	0.78	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS (continued)
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
7.41	2-Propanol, 1-(2-methoxypropoxy)	8	2	3.56	5.19	1.32	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.41	Unknown alcohol	8	1	3.06	3.06	0.255	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.54	Dimethylnonane isomer	8	0	0	0	0	8	2	7.8	9.89	1.47	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.54	C10 Alkane	8	0	0	0	0	8	1	8.29	8.29	0.69	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.62	Unknown	8	2	4.58	6.4	0.92	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
7.62	2-Ethylhexanol	8	3	6.4	15.1	4.95	8	0	0	0	0	16	14	2.4	18.7	11.05	0.0137	YES	200 = 201 201 ≠ 202
7.62	C8 Alcohol	8	2	6.31	8.92	2.76	8	1	9.58	9.58	2.40	16	0	0	0	0	0.1463	NO	200 = 201 = 202
7.62	Unknown Alkane	8	0	0	0	0	8	1	11.4	11.4	2.85	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.64	C10 Alkyl benzene	8	3	4.57	6.33	2.25	8	8	10.3	23.9	15.54	16	12	3.04	9.39	5.32	0.0074	YES	200 ≠ 201 201 ≠ 202
7.71	Limonene	8	8	29	55.9	37.87	8	8	11	25	21.53	16	13	3.76	21.9	12.57	0.0044	YES	200 = 201 201 = 202
7.73	C10 Cycloalkene	8	0	0	0	0	8	0	0	0	0	16	1	3	3	0.125	0.6065	NO	200 = 201 = 202
7.74	Benzyl alcohol	8	1	13.8	13.8	1.15	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.74	Phellandrene isomer	8	0	0	0	0	8	7	17.6	28.7	20.61	16	13	2.35	14.5	8.83	0.0016	YES	200 ≠ 201 201 = 202
7.74	Phellandrene isomer/Unknown	8	0	0	0	0	8	1	26.8	26.8	2.23	16	0	0	0	0	0.2231	NO	200 = 201 = 202
7.85	Indane	8	1	4.08	4.08	1.02	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.02	C9 Alkane/C10 Alkyl benzene	8	0	0	0	0	8	0	0	0	0	16	2	4.12	5.54	0.86	0.3442	NO	200 = 201 = 202
8.03	C11 Alkane/C10 alkyl benzene	8	0	0	0	0	8	1	8.49	8.49	0.71	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.03	Unknown alkane/C10 Alkyl benzene	8	0	0	0	0	8	3	11.9	15.2	5.28	16	8	4.95	8.95	3.44	0.1645	NO	200 = 201 = 202
8.06	C12 Alkane	8	3	5.92	9.43	1.79	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.06	Unknown alkane	8	2	3.89	5.5	0.78	8	2	9.29	10.6	1.66	16	0	0	0	0	0.1239	NO	200 = 201 = 202
8.06	Unknown	8	0	0	0	0	8	0	0	0	0	16	1	1.87	1.87	0.08	0.6065	NO	200 = 201 = 202
8.06	C11 Alkane	8	0	0	0	0	8	1	7.73	7.73	1.93	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.08	C11 Alkane/Unknown	8	0	0	0	0	8	1	9.26	9.26	0.77	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.08	C11 Alkane/C10 alkyl benzene	8	0	0	0	0	8	2	7.86	8.39	2.66	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.08	Methyl decane isomer/C10 Alkyl benzene	8	0	0	0	0	8	4	8.98	12.9	4.12	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
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Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS (continued)
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
8.11	Unknown alkane/C10 Alkyl benzene	8	0	0	0	0	8	0	0	0	0	16	2	3.04	3.19	0.51	0.3442	NO	200 = 201 = 202
8.12	C10 Alkyl benzene/Unknown	8	2	3.69	4.51	2.05	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.12	Methyl decane isomer	8	0	0	0	0	8	5	8.44	17.4	6.68	16	0	0	0	0	0.0059	YES	200 = 201 201 = 202
8.12	Methyl decane isomer/Unknown	8	0	0	0	0	8	2	11.3	12.4	3.86	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.12	C10 Alkyl benzene	8	0	0	0	0	8	0	0	0	0	16	1	2.42	2.42	0.30	0.6065	NO	200 = 201 = 202
8.13	C9 Alkane/C10 Alkyl benzene	8	0	0	0	0	8	0	0	0	0	16	1	2.8	2.8	0.35	0.6065	NO	200 = 201 = 202
8.13	C10H16 Aromatic/Alkane	8	1	4.9	4.9	0.41	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.13	Unknown	8	2	2.05	3.82	0.49	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.17	Myrcene isomer	8	0	0	0	0	8	0	0	0	0	16	1	5.06	5.06	0.21	0.065	NO	200 = 201 = 202
8.17	Alkene/Cycloalkane	8	0	0	0	0	8	0	0	0	0	16	3	2.25	3.83	0.57	0.3442	NO	200 = 201 = 202
8.127	C8 Cycloalkane	8	0	0	0	0	8	0	0	0	0	16	1	2.96	2.96	0.37	0.6065	NO	200 = 201 = 202
8.16	Unknown alkene/Cycloalkane	8	0	0	0	0	8	0	0	0	0	16	1	4.31	4.31	0.18	0.6065	NO	200 = 201 = 202
8.18	C9 Cycloalkane	8	0	0	0	0	8	0	0	0	0	16	1	2.48	2.48	0.10	0.6065	NO	200 = 201 = 202
8.18	Unknown alkene/Cycloalkane	8	0	0	0	0	8	0	0	0	0	16	1	3.48	3.48	0.15	0.6065	NO	200 = 201 = 202
8.2	Cyclopropane, pentyl-	8	1	4.48	4.48	1.12	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.2	1-Octanol	8	0	0	0	0	8	1	10.3	10.3	2.58	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.22	C11 Alkane	8	0	0	0	0	8	2	7.97	8.55	1.38	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.22	Methyl decane isomer	8	0	0	0	0	8	2	9.16	10.4	1.63	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.24	Unknown	8	6	2.42	11	5.69	8	0	0	0	0	16	1	1.92	1.92	0.24	0.003	YES	200 ≠ 201 201 = 202
8.24	C10 Alcohol	8	2	5.66	7.78	1.12	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.52	C10 Alkyl benzene/Unknown	8	2	4.2	4.47	2.17	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
8.64	Unknown	8	1	4.76	4.76	0.40	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
8.62	Undecane	8	2	3.89	4.43	2.08	8	8	3	66.3	46.02	16	1	5.26	5.26	0.22	0.0036	YES	200 = 201 201 ≠ 202
8.69	Nonanal	8	8	5.57	29.3	23.59	8	8	4.76	47.4	34.77	16	11	7.55	21.1	9.92	0.0059	YES	200 = 201 201 ≠ 202
8.99	Tetramethyl benzene isomer/Unknown	8	0	0	0	0	8	0	0	0	0	16	1	2.21	2.21	0.28	0.6065	NO	200 = 201 = 202
9.03	Tetramethyl benzene isomer	8	0	0	0	0	8	0	0	0	0	16	1	4.14	4.14	0.17	0.6065	NO	200 = 201 = 202
9.04	Tetramethyl benzene isomer/Unknown	8	0	0	0	0	8	0	0	0	0	16	1	2.41	2.41	0.30	0.6065	NO	200 = 201 = 202

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WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS
Air Conditioning: OFF

		Unit: 200					Unit: 201					Unit: 202					Statistical Comparison		
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Follow-up Multiple Comparisons?	Conclusions
9.26	Siloxane compound	8	8	3.14	186	76.03	8	7	16.9	42.1	25.31	16	11	8.96	548	129.51	0.4776	NO	200 = 201 = 202
9.44	1-Phenyl-1-butene/Unknown	8	1	4.32	4.32	1.08	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
9.53	Acetic acid, phenylmethyl ester	8	3	2.92	3.91	0.86	8	0	0	0	0	16	0	0	0	0	0.0408	YES	200 = 201 201 = 202
9.62	Unknown	8	0	0	0	0	8	0	0	0	0	16	1	3.07	3.07	0.13	0.0605	NO	200 = 201 = 202
9.74	Menthol	8	0	0	0	0	8	0	0	0	0	16	11	3.78	31.2	6.89	0.0053	YES	200 = 201 201 ≠ 202
9.8	Ethanol, 2-(2-butoxyethoxyl)-	8	2	9.99	14.1	6.02	8	5	7.89	17.6	10.45	16	11	5.32	26.9	10.59	0.5097	NO	200 = 201 = 202
10.01	Estragole/Unknown	8	2	3.61	8.86	1.04	8	5	7.62	10.6	5.59	16	11	2.94	11.2	5.16	0.1862	NO	200 = 201 = 202
10.01	Estragole	8	0	0	0	0.00	8	1	11.1	11.1	2.78	16	0	0	0	0	0.2231	NO	200 = 201 = 202
10.02	Unknown	8	4	10.6	12.7	7.63	8	0	0	0	0	16	0	0	0	0	0.006	YES	200 = 201 201 = 202
10.02	Aldehyde/Unknown	8	1	8.36	8.36	0.70	8	0	0	0	0	16	0	0	0	0.00	0.2231	NO	200 = 201 = 202
10.28	Unknown	8	0	0	0	0	8	0	0	0	0	16	3	3.07	4.73	0.49	0.3442	NO	200 = 201 = 202
11.16	Tridecane	8	0	0	0	0	8	0	0	0	0	16	10	2.33	6.9	2.59	0.0151	YES	200 = 201 201 = 202
11.2	Dimethylethylcyclohexanol isomer	8	4	4.28	5.24	1.59	8	0	0	0	0	16	3	1.77	3.88	0.61	0.2584	NO	200 = 201 = 202
11.39	Siloxane compound	8	2	4.06	8.93	1.08	8	0	0	0	0	16	10	2.7	18.8	6.12	0.0443	YES	200 = 201 201 = 202
11.48	Unknown	8	1	2.91	2.91	0.24	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
11.9	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	8	7	5.51	71.1	36.28	8	7	8.25	23.7	15.66	16	11	3.71	35.5	14.73	0.2471	NO	200 = 201 = 202
12.12	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	8	7	6.1	92.5	46.48	8	7	12.5	32.4	22.48	16	11	2.69	43.7	17.97	0.2575	NO	200 = 201 = 202
12.31	Tetradecane	8	0	0	0	0	8	0	0	0	0	16	10	3.8	12.6	4.55	0.0151	YES	200 = 201 201 = 202
12.72	Di-epi-.alpha-cedrene	8	1	4.41	4.41	1.10	8	0	0	0	0	16	1	3.19	3.19	0.13	0.5454	NO	200 = 201 = 202
12.73	Cedrene isomer	8	0	0	0	0	8	0	0	0	0	16	6	4	5.29	1.17	0.3442	NO	200 = 201 = 202
12.98	Unknown	8	0	0	0	0	8	0	0	0	0	16	4	3.19	4.38	1.16	0.1811	NO	200 = 201 = 202
13.4	Pentadecane	8	0	0	0	0	8	0	0	0	0	16	9	2.31	7.14	2.60	0.0384	YES	200 = 201 201 = 202
14.15	Unknown	8	1	5.07	5.07	0.42	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
14.45	Propanoic acid, 2-methyl-, 1-(1,1-dimethylethyl)-2-methyl-1,3-propanediyl ester	8	4	3.97	6.74	3.59	8	0	0	0	0	16	10	4.31	14	5.09	0.0418	YES	200 = 201 201 = 202
14.45	Unknown	8	1	3.71	3.71	0.31	8	0	0	0	0	16	0	0	0	0	0.2231	NO	200 = 201 = 202
17.8	Dibutyl phthalate	8	0	0	0	0	8	0	0	0	0	16	1	24.1	24.1	1.00	0.6065	NO	200 = 201 = 202

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test

**Averages were computed using zero in place of compounds not-detected.
WRS test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.
If the computed probability-value was < 0.05 follow-up testing was performed to isolate which Units can be assumed to be statistically different.
Follow-up tests (Dunn's Method for multiple comparison of the medians were conducted using SigmaStat version 3.01.

Summary of Indoor Air Sampling Events in Louisiana: XAD-PAH TICS
Air Conditioning: On

		Unit: 200					Unit: 201					Statistical Comparison	
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	Average** (µg/m3)	WRS Probability Value	Conclusion
3.57	Unknown alcohol	8	0	0	0	0	8	1	21.3	21.3	1.775	0.4533	200 = 201
3.63	Toluene	8	4	2.09	2.9	1.29	8	0	0	0	0	0.1859	200 = 201
4.1	Hexanal	8	8	15.9	23.6	19.18	8	6	24.7	37.9	22.33	0.8852	200 = 201
4.32	Acetic acid, butyl ester	8	1	2.43	2.43	0.20	8	0	0	0	0.00	0.4533	200 = 201
4.46	C9 Alkane	8	1	2.37	2.37	0.20	8	0	0	0	0	0.4533	200 = 201
4.46	Heptane, 2,4-dimethyl	8	3	2.07	3.31	0.65	8	0	0	0	0	0.1859	200 = 201
4.58	Pentanol	8	0	0	0	0	8	1	3.39	3.39	0.85	0.4533	200 = 201
5.03	Unknown	8	0	0	0	0	8	1	2.3	2.3	0.58	0.4533	200 = 201
5.13	Ethylbenzene	8	8	3.66	5.8	4.78	8	0	0	0	0	0.0211	200 ≠ 201
5.13	C9 Alkane	8	0	0	0	0	8	1	3.8	3.8	0.32	0.4533	200 = 201
5.13	C9 Alkane/Ethyl Benzene	8	0	0	0	0	8	5	3.36	4.52	2.39	0.0689	200 = 201
5.14	1-Hexanol	8	0	0	0	0	8	2	3.16	30.6	7.91	0.1859	200 = 201
5.14	Unknown alcohol	8	0	0	0	0	8	4	2.84	4.18	1.86	0.0689	200 = 201
5.25	Xylene isomer/C9 Alkane	8	0	0	0	0	8	6	5.07	7.22	4.36	0.0689	200 = 201
5.26	Xylene isomer	8	8	8.5	13.6	11.06	8	1	4.19	4.19	0.35	0.0265	200 ≠ 201
5.53	2-Heptanone	8	8	2.34	4.13	3.25	8	6	3.86	5.99	3.49	0.4705	200 = 201
5.6	Styrene	8	8	2.31	3.34	2.86	8	1	3.68	3.68	0.92	0.3005	200 = 201
5.65	Xylene isomer	8	8	4.42	8.01	6.36	8	0	0	0	0	0.0211	200 ≠ 201
5.69	Nonane	8	0	0	0	0	8	6	13.4	20.2	11.22	0.0689	200 = 201
5.72	Heptanal	8	8	4.57	8.06	6.79	8	4	5.28	13.7	5.64	0.8852	200 = 201
6.22	C10 Alkane/C9 Cycloalkane isomer	8	0	0	0	0	8	6	4.49	6.95	3.89	0.0689	200 = 201
6.22	Unknown	8	0	0	0	0	8	1	4.48	4.48	1.12	0.4533	200 = 201
6.3	Pinene isomer	8	8	71.1	154	114.61	8	7	37	107	60.68	0.1124	200 = 201
6.33	Xylene isomer	8	0	0	0	0	8	1	2.45	2.45	0.61	0.4533	200 = 201
6.51	Camphene/Alkane	8	0	0	0	0	8	1	3.97	3.97	0.33	0.4533	200 = 201
6.55	Camphene	8	8	2.34	5.47	3.81	8	0	0	0	0	0.0211	200 ≠ 201
6.56	Camphene/Unknown	8	0	0	0	0	8	5	6.3	8.77	4.68	0.0689	200 = 201
6.59	Ethanol, 2,2'-oxybis-/C9 Alkyl benzene	8	1	2.34	2.34	0.195	8	0	0	0	0	0.4533	200 = 201
6.59	2-Heptanone	8	0	0	0	0	8	1	3.33	3.33	0.83	0.4533	200 = 201
6.64	Methyl nonane isomer	8	0	0	0	0	8	6	3.73	8.81	3.83	0.0689	200 = 201
6.69	Benzaldehyde/C9 Alkyl benzene	8	7	5.73	8.99	5.36	8	0	0	0	0	0.0689	200 = 201
6.69	Benzaldehyde/Unknown	8	0	0	0	0	8	6	9.22	14.1	8.04	0.0689	200 = 201
6.7	C9 Alkyl benzene	8	1	9.3	9.3	2.33	8	0	0	0	0.00	0.4533	200 = 201
6.74	Heptanol	8	5	2.15	4.58	2.75	8	6	5.06	7.96	4.78	0.2454	200 = 201
6.74	Heptanol/Unknown	8	3	3.45	3.76	0.91	8	0	0	0	0	0.4533	200 = 201
6.74	Nonane	8	0	0	0	0	8	1	7.97	7.97	1.99	0.4533	200 = 201
6.77	Heptanal	8	0	0	0	0	8	1	7.91	7.91	1.98	0.4533	200 = 201
6.79	Methyl nonane isomer	8	0	0	0	0	8	6	5.99	9.02	5.09	0.0689	200 = 201
6.89	Phenol/Unknown	8	6	2.18	3.88	1.71	8	6	4.87	6.91	4.10	0.1832	200 = 201
6.89	Phenol	8	2	3.85	4.07	1.98	8	0	0	0	0.00	0.1859	200 = 201
6.98	Pinene isomer	8	8	21.3	43.3	33.27	8	7	7.94	39.7	23.07	0.1939	200 = 201
7.1	Unknown	8	8	4.02	6.69	6.16	8	1	3.54	3.54	0.30	0.0265	200 ≠ 201
7.1	Furan, 2-pentyl-	8	0	0	0	0	8	5	5.8	7.86	3.89	0.0689	200 = 201
7.2	C9 Alkyl benzene	8	8	4.99	9.34	7.15	8	0	0	0	0	0.0211	200 ≠ 201
7.21	Decane	8	0	0	0	0	8	6	26.7	36.3	20.02	0.0689	200 = 201
7.26	Octanal	8	8	9.15	13.9	11.39	8	6	18.9	24.8	15.38	0.3123	200 = 201
7.4	Pinene isomer	8	0	0	0	0	8	1	56.6	56.6	14.15	0.4533	200 = 201
7.62	Unknown	8	1	4.32	4.32	1.08	8	0	0	0	0	0.4533	200 = 201
7.62	2-Ethylhexanol	8	4	3.64	4.27	1.31	8	0	0	0	0	0.1859	200 = 201
7.62	C8 Alcohol	8	2	2.47	4.05	0.54	8	0	0	0	0	0.1859	200 = 201
7.64	C10 Alkyl benzene	8	5	2.35	7.08	3.77	8	6	10.3	15.4	8.61	0.3123	200 = 201
7.71	Limonene	8	8	14.1	29.1	22.14	8	7	2.24	19.4	11.82	0.0304	200 ≠ 201
7.74	Phellandrene isomer	8	0	0	0	0	8	6	19.4	28.9	15.93	0.0689	200 = 201
7.75	C6 Organic acid	8	0	0	0	0	8	1	2.33	2.33	0.58	0.4533	200 = 201
7.79	Benzaldehyde/Unknown	8	0	0	0	0	8	1	7.67	7.67	1.92	0.4533	200 = 201
7.85	Indane	8	1	2.53	2.53	0.63	8	0	0	0	0	0.4533	200 = 201
8.03	C11 Alkane/C10 alkyl benzene	8	0	0	0	0	8	1	4.38	4.38	0.37	0.4533	200 = 201
8.06	Unknown alkane	8	2	4.04	5.66	0.81	8	0	0	0	0	0.4533	200 = 201
8.06	Unknown	8	3	2.01	2.95	1.00	8	0	0	0	0	0.0689	200 = 201
8.06	C11 Alkane	8	2	2.66	3.79	0.54	8	1	3.93	3.93	0.33	1	200 = 201
8.08	C11 Alkane/C10 alkyl benzene	8	0	0	0	0.00	8	4	2.99	4.78	1.28	0.1859	200 = 201
8.09	C11 Alkane	8	0	0	0	0	8	2	3.21	3.28	0.54	0.4533	200 = 201
8.09	Pinene isomer	8	0	0	0	0	8	1	22.7	22.7	5.68	0.4533	200 = 201
8.09	C11 Alkane/C10 Alkyl benzene	8	0	0	0	0	8	1	4.78	4.78	0.40	0.4533	200 = 201
8.2	1-Octanol	8	0	0	0	0	8	3	3.57	4.14	1.58	0.1859	200 = 201
8.22	C11 Alkane	8	0	0	0	0	8	1	3.14	3.14	0.26	0.4533	200 = 201
8.22	Methyl decane isomer	8	0	0	0	0	8	3	3.98	4.12	1.02	0.1859	200 = 201
8.24	Unknown	8	8	2.27	6.03	3.89	8	0	0	0	0	0.0211	200 ≠ 201
8.27	Decane	8	0	0	0	0	8	1	3.7	3.7	0.93	0.4533	200 = 201
8.33	Octanal	8	0	0	0	0	8	1	7.03	7.03	1.76	0.4533	200 = 201
8.52	C10 Alkyl benzene/Unknown	8	2	2.67	2.95	1.41	8	0	0	0	0	0.1859	200 = 201
8.64	Unknown	8	1	2.97	2.97	0.25	8	0	0	0	0	0.4533	200 = 201
8.62	Undecane	8	0	0	0	0.00	8	6	11.8	18.2	9.55	0.0689	200 = 201
8.69	Nonanal	8	8	12.4	22.2	15.77	8	6	19.6	24.9	14.98	0.5614	200 = 201
8.74	C10 Alkyl benzene	8	0	0	0	0	8	1	2.21	2.21	0.55	0.4533	200 = 201
8.81	C1H16 Benzene isomer	8	0	0	0	0	8	1	5.24	5.24	1.31	0.4533	200 = 201
8.84	Phellandrene isomer	8	0	0	0	0	8	1	7.39	7.39	1.85	0.4533	200 = 201
9.26	Siloxane compound	8	4	25.2	76.5	23.7	8	6	4	43.6	11.39	1	200 = 201
9.53	Acetic acid, phenylmethyl ester	8	2	2.17	2.53	0.39	8	0	0	0	0	0.4533	200 = 201
9.71	Nonanal	8	0	0	0	0	8	1	2.64	2.64	0.66	0.4533	200 = 201
10.01	Estragole/Unknown	8	1	6.13	6.13	1.53	8	0	0	0	0	0.4533	200 = 201
10.01	Estragole	8	0	0	0	0	8	6	4.58	6.7	3.59	0.0689	200 = 201
10.02	Unknown	8	7	3.27	7.58	4.33	8	0	0	0	0	0.0689	200 = 201
11.2	Dimethylethylcyclohexanol isomer	8	2	2.77	2.87	0.47	8	0	0	0	0	0.4533	200 = 201
11.2	C10 Alcohol	8	3	2.7	3.51	0.78	8	0	0	0	0	0.4533	200 = 201
11.9	Propanoic acid, 2-methyl-, 2,2-dimethyl-1 (2-hydroxy-1-methylethyl)propyl ester	8	8	4.25	17.8	12.82	8	6	3.72	8.12	4.03	0.0304	200 ≠ 201
12.12	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	8	8	5.75	24.6	17.80	8	6	5.44	11.2	5.69	0.0304	200 ≠ 201
12.72	Unknown	8	1	2.83	2.83	0.24	8	0	0	0	0	0.4533	200 = 201
12.73	C15 Aromatic	8	1	3.83	3.83	0.32	8	0	0	0	0	0.4533	200 = 201
12.73	Cedrene isomer	8	1	1.96	1.96	0.49	8	0	0	0	0	0.4533	200 = 201
14.45	Propanoic acid, 2-methyl-, 1-(1,1-dimethylethyl)-2-methyl-1,3-propanediyl ester	8	4	1.88	3.74	1.32	8	0	0	0	0	0.1859	200 = 201

N: number of samples analyzed
µg/m3: micrograms per cubic meter
WRS: Wilcoxon-Rank-Sum test
**Averages were computed using zero in place of compounds not-detected.
Wilcoxon-Rank-Sum test was used to compare Unit 200 to Unit 201.
WRS was computed using SAS® version 9.0 for Windows.
Statistical comparisons were performed with alpha=0.05.

Summary of Outdoor Air Sampling Events in Louisiana: XAD-PAH TICS

		Unit: 200				Unit: 201				Unit: 202			
Retention Time	Non-Target Compound	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)	N	Number of Detects	Minimum Detected (µg/m3)	Maximum (µg/m3)
5.26	Xylene isomer	4	0	0	0	4	0	0	0	4	1	2.86	2.86
5.53	2-Heptanone	4	0	0	0	4	0	0	0	4	1	3.42	3.42
6.3	Pinene isomer	4	3	2	11.7	4	2	2.18	2.54	4	0	0	0
6.98	Pinene isomer	4	2	3.98	6.36	4	0	0	0	4	0	0	0
7.79	Unknown	4	2	3.82	5.11	4	1	3.68	3.68	4	0	0	0
8.86	Unknown	4	0	0	0	4	1	3.33	3.33	4	0	0	0
11.05	Phenol, 4-chloro-3-methyl	4	4	1.53	15.5	4	0	0	0	4	0	0	0

µg/m3: micrograms per cubic meter
N: number of samples analyzed

Appendix I

Health Evaluation

The Technical Team used existing public health chemical concentration guidelines, when available, to determine if contaminants pose a potential hazard for occupants, warranting further evaluation. These guidelines included EPA's Reference Concentrations (RfCs), ATSDR Minimum Risk Levels (MRLs), American Industrial Hygiene Association's (AIHA) Emergency Response Preparedness Guidelines (ERPGs), and California's Reference Exposure Limits (RELs). EPA RfCs are estimates of a continuous inhalation exposure to the human population, including populations with pre-existing conditions or sensitivities, which is likely to be without appreciable risk of deleterious non-cancer effects during a lifetime (U.S. EPA, 1994). An ATSDR MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure (http://www.atsdr.cdc.gov/mrls). They are set below levels that, based on current information, might cause adverse health effects in the people most sensitive to such substance induced effects. MRLs are derived for acute (1-14 days), intermediate (>14-364 days), and chronic (365 days and longer) exposure durations. Because of built-in uncertainty factors, exposure to a concentration above an RfC or MRL is not necessarily expected to cause symptoms or illness. RfCs and MRLs are not intended to define clean up or action levels, or delineate a level that is likely to cause adverse health effects.

Health-based guidelines for community exposures are not available for many chemicals; therefore the technical team also looked at existing occupational exposure guidelines (e.g., National Institute for Occupational Safety and Health [NIOSH], American Conference of Governmental Industrial Hygienists [ACGIH], and Occupational Safety and Health Administration [OSHA]). However, occupational levels are not usually appropriate for application to community settings for a variety of reasons. For example, the population in residential settings is more diverse (e.g., children, elderly) and may have greater susceptibility as a result of pre-existing health conditions. Furthermore, the frequency, duration, and amount of exposure in homes can vary substantially from those in occupational settings (e.g., longer than an 8 hour workday).

Comparison of results to guidelines

Irritation to mucosal membrane and skin are a common complaint from homeowners in affected homes. Compounds which are known irritants to the upper respiratory tract, eyes or skin are noted in Appendix F. Note that compounds may not have been present at levels high enough to produce irritation. Odor threshold values were available for 82 of the compounds listed in Appendix F; of these, fifteen chemical compounds exceeded their odor threshold. These chemical compounds are: acetic acid, butanoic acid, formaldehyde, formic acid, furfural, heptanol, hydrogen sulfide, nonanal, octanal, pentanal, 2-methyl propanal, 2-methyl propanoic (aka isobutyric acid), propanoic acid, 2-methyl-propanoic acid anhydride, thiophenes, and TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate). The maximum concentrations of three compounds exceeded

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health-based guideline values. Two of these compounds, acetaldehyde and formaldehyde, are known irritants. The third compound, naphthalene, had an estimated maximum concentration and a mean concentration which just exceed the RfC guideline value. However, these are estimated concentrations due to the high method detection limit for naphthalene and therefore must be confirmed by additional studies. The maximum concentration measured for pinene falls just below both its odor threshold.

The Technical Team evaluated the following chemical groups or chemical classes as possible health hazards to residents. Contaminants were selected due to associations with existing imported drywall test results; irritant properties, health concern, and concentrations detected:

- reduced sulfur compounds, sulfur dioxide, inorganic gasses
- acetic acid, formic acid
- aldehydes
- pinene & its isomers

<u>Reduced sulfur compounds</u>

Hydrogen sulfide: Depending on the concentration in the air, hydrogen sulfide can affect the eyes, nose, throat, lungs, and nervous system (Ahlborg 1951, Arnold 1985, Bhambini 1994, 1996a, 1996b; Bhambini 2001, CIIT 1983a, b, c; Curtis 1975, Haider et al. 1990, Lopez 1988, Luck 1989, Jappinen 1990, Reiffenstein 1992, and Spoylar 1951). Hydrogen sulfide irritates the eyes, nose, and throat by forming sodium sulfide (a compound that has an alkaline or basic pH). Once inhaled, hydrogen sulfide can enter the blood stream by diffusion through the lungs. Most of the hydrogen sulfide in the blood is oxidized to sulfates (primarily thiosulfate) by the liver and excreted in the urine. People with cardiac or nervous system disorders, people with pre-existing respiratory problems (asthma, restrictive lung disease, etc.), the very young, and the elderly are more sensitive to hydrogen sulfide (ATSDR 2006).

A study of people living around a paper mill exposed to an annual average hydrogen sulfide concentration of 4.3 ppb (6 $\mu g/m^3$) and daily maximum concentrations of up to 70 ppb (97.6 $\mu g/ m^3$), reported a 12-fold increase in eye and respiratory irritation (Kilburn 1997, Kilburn 1995). These community members were exposed to other chemicals in addition to hydrogen sulfide.

The ATSDR MRL for hydrogen sulfide is 70 ppb (97.6 $\mu g/m^3$) for short term (acute) exposures (less than 14 days). This short-term (acute) MRL is based on a study in which 2 of 10 asthmatics exposed to 2,000 ppb (2,789 $\mu g/m^3$) hydrogen sulfide for 30 minutes experienced apparent bronchial obstruction (Jappinen 1990). This MRL includes an uncertainty factor of 27 (3 for the use of a minimum Lowest Observed Adverse Effect Level, 3 for human variability, and 3 for database deficiencies). The ATSDR MRL for hydrogen sulfide is 20 ppb (27.9 $\mu g/m^3$) for intermediate length (14-364 days) exposures.

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The intermediate hydrogen sulfide MRLs is based on a No Observable Adverse Effect Level (NOAEL) in an animal study that showed olfactory neuron loss and basal cell hyperplasia (Brenneman 2000). The California chronic (lifetime) REL for H_2S is 10 $\mu g/m^3$ (14 ppb) and the EPA RfC for chronic exposure is 1.4 ppb (2.0 $\mu g/m^3$).

With the EPA RfC of 1.4 ppb (2.0 $\mu g/m^3$) for chronic exposure, levels found in real-time monitoring are above the chronic RfC and above the lowest reported odor threshold. Reported odor thresholds range between 1 and 130 ppb (1.4 to 181 $\mu g/m^3$).

Carbon disulfide: FL Test homes 80 and 102 had measurable levels of carbon disulfide. The EPA/ERT results found a maximum level of 2.62 ppb (8.2 $\mu g/m^3$), but this was lower than the specified method reporting limit of 5.00 ppb (15.6 $\mu g/m^3$); 3.22 ppb (10.0 $\mu g/m^3$) was measured in a wall cavity. The levels detected are below the method's reporting limit and should be treated as estimated values. FDOH sampling efforts found the maximum concentration 2.5 ppb (7.8 $\mu g/m^3$), which was also at the method reporting limit for the analysis. These values are also below available health based guidelines. The ATSDR chronic MRL is 300 ppb (934 $\mu g/m^3$), the EPA RfC is 225 ppb (700 $\mu g/m^3$), and the California chronic REL is 257 ppb (800 $\mu g/m^3$). The level detected was also below the reported odor threshold for carbon disulfide of 96 ppb (298.8 $\mu g/m^3$). This odor threshold represents 50% odor detection.

Sulfur dioxide (SO_2): No time-weighted air samples were collected for SO_2. Real-time measurements are close to both instrument detection limits and should be used with caution. Because of the latter, a health determination regarding the possible exposures and health impact of SO_2 cannot be determined by the Technical Team. The two residences (102 and 200) where SO_2 was detected indoors were Test homes. Self-reported symptoms included eye, nose, throat (ENT), and respiratory irritation. These reported symptoms and exacerbation of pre-existing respiratory problems (e.g., asthma) can occur at low exposure levels. SO_2 is regulated in ambient air (outdoors) by EPA under NAAQS. Levels must not exceed 140ppb (for a 24-hour period) or 500ppb (the 3-hour limit; www.epa.gov/air/criteria.html; www.epa.gov/air/urbanair/so2/hlth1.html). The ATSDR acute (1-14 days) MRL for SO_2 is 10 ppb (26.2 $\mu g/m^3$). The AIHA ERPG-1 is 300 ppb (787 $\mu g/m^3$). Because of the known adverse respiratory health outcomes, especially for young children with asthma, the Technical Team recommends drywall chamber testing for SO_2 to further investigate its presence.

Sulfuric acid (H_2SO_4) LA homes only: EPA/ERT conducted real-time monitoring for sulfuric acid inside and outside of homes in LA. It was not detected above the instrument's lower detection limit of 26 ppb (104.3 $\mu g/m^3$). Time-weighted samples detected low levels (up to 50 $\mu g/m^3$) outside of one home in FL (Control home 101) and two homes in LA (homes 200 and 201). Sulfuric acid was detected inside homes 101, 102, 200, and 201 at concentrations below 50 $\mu g/m^3$. The majority of the time, sulfuric acid was not detected in the collected samples (the method detection limit is approximately 40 $\mu g/m^3$). Because the results are close to the lower detection limit of the direct reading instrument, they should be interpreted with caution.

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An acute MRL has not been established for sulfuric acid. Many human and animal studies show that low levels of sulfuric acid can damage the lung. As with sulfur dioxide, people with asthma are particularly sensitive. Exercising asthmatic children (age 12 to 19) exposed to 70 $\mu g/m^3$ sulfuric acid for 40 to 45 minutes demonstrated a temporary decrease in forced vital capacity and forced expiratory volume (Hanley 1992). Several studies (reviewed in ATSDR 1998b) have shown that people exposed to100 $\mu g/m^3$ for 1 to 2 hours experienced the following changes to the lung:

- an increase in respiratory resistance
- a decrease in maximum air flow at 50% and 75% vital capacity
- a slight decrease in forced expiratory volume
- decreased pH of alveolar macrophage
- decreased phagocytic activity of macrophages
- decreased production of superoxide anion and tumor necrosis factor activity
- a reduced rate of bronchial mucociliary clearance of 5.2 micrometer particles
- an increased responsiveness of bronchial rings to acetylcholine and histamine

At somewhat higher levels of 350 to 450 $\mu g/m^3$, other studies have shown the following pulmonary effects:

- a decrease in specific airway conductance at rest,
- a reduction in forced expiratory volume
- a reduction in maximum expiratory flow rates at 60% total lung capacity
- an increase in respiration rate
- a decrease in maximum flow rate

People with asthma have the greatest sensitivity to sulfuric acid and have experienced effects when sulfuric acid levels are as low as 70 $\mu g/m^3$. Non-asthmatic people have experienced pulmonary effects starting at levels of 100 $\mu g/m^3$ but more typically at levels of 350 $\mu g/m^3$. Because of the known adverse respiratory health outcomes, especially for young children with asthma, the Technical Team recommends drywall chamber testing for sulfuric acid to further investigate its presence.

Further consideration should be given to additive effects for reduced sulfur compounds and acid gases since they have similar health effects.

Formic and Acetic Acids, LA homes only: Time-weighted samples detected low levels of formic acid, up to 1100 ppb, (2879 $\mu g/m^3$), inside all three homes in LA (Homes 200, 201 and 202). Formic acid was detected outside homes 201 and 202 at levels up to 730 ppb (1,911 $\mu g/m^3$). The maximum levels detected inside and outside the home are not significantly different and are close to the method detection limit of 550 ppb (1,440 $\mu g/m^3$) and therefore should be interpreted with caution. Formic acid was not sampled for in FL homes. Both the current OSHA permissible exposure limit (PEL), the ACGIH threshold limit value (TLV) and the NIOSH REL are 5000 ppb (9000 $\mu g/m^3$), as an 8-hour time-weighted average (TWA, not to be exceeded in one day). The levels measured in the Louisiana homes were 5-fold lower than these regulatory exposure limits. EPA

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also has a regional screening value of 3.1 μg/m^3 for formic acid levels in ambient air. Workers exposed to formic acid in a textile plant complained of nausea at an average formic acid concentration of 15,000 ppb (ACGIH 1986). Formic acid is a carboxylic acid whose primary use is as a preservative and antibacterial agent. It is found in flavorings and perfumes, coagulated rubber, solvents, cleaners, detergents, PVC, refrigerants and textiles (as a dye and tanning agent). It is also commonly present in many foods as well as insect and nettle stings. Formic acid is used for pH regulation in flue gas desulfurization process; present in the limestone slurry used to capture the sulfur dioxide released from the burning of fossil fuels. Formic acid is also a combustion product from alternative fuel vehicles and tobacco.

Time-weighted samples detected low levels of acetic acid, up to 590 ppb (1450 μg/m^3) inside LA homes 200, 201 and 202. The method detection limit was 49 ppb (121 μg/m^3). There was no statistical difference between Test homes and Control homes suggesting that the source of acetic acid was not imported corrosive drywall. No acetic acid was detected outside the homes. The OSHA PEL is 10,000 ppb (25,000 μg/m^3) TWA. ACGIH's TLV and NIOSH's REL are also 10,000 ppb TWA, both agencies also have a STEL at 15,000 ppb (37,000 μg/m^3). Acetic acid is listed by the FDA as a direct food substance that is generally recognized as safe (GRAS). Five cases of occupational asthma with chronic rhinitis and sinusitis were reported among employees in a vegetable pickling plant where the mean acetic acid concentration in 10 workroom air samples was 12,200 ppb. In occupational studies, at 5,000 ppb (21,000 μg/m^3), minimal and reversible respiratory tract irritation have been observed. Exposure to high levels ranging from 50,000 ppb to 1.3x10^6 ppb (210,000 μg/m^3- 3.0 x 10^6 μg/m^3) can cause marked irritation of the eyes, nose, and upper respiratory tract (von Oettingen 1960, AIHA 1972). The levels detected in these homes were 20-fold lower than these regulatory health guidance values. Acetic acid is an organic acid, with a distinctive pungent odor, and is used as a solvent, preservative and in the manufacture of rubber, plastics, acetate fibers, pharmaceuticals, and photographic chemicals. It is emitted from building materials such as plywood and is also the chief acid found in vinegar.

Pinene: Pinene was detected in all sampled homes, Test and Control. With the exception of Test home 102, the measured levels did not differ between the other Test and Control homes, falling below 200ppb (1,113 μg/m^3) and below the odor threshold of 692 ppb (3849 μg/m^3)(Appendix F). Test home 102 had a mean level of 616 μg/m^3. At lower levels of exposure, it irritates skin and mucous membranes (HSDB). Published scientific literature reports indoor air levels ranging from non-detectable to 399 μg/m^3, and outdoor levels ranging from non-detectable to 18 μg/m^3 (NYDOH). Alpha pinene is regulated as turpentine though all occupational health guidelines exceeded the maximum concentration measured in the Test home (OSHA's Permissible Exposure Limit [PEL] of 556,237 μg/m^3, 8 hour TWA, NIOSH REL of 556,237 μg/m^3, ACGIH threshold limit value [TLV®] of 111,247 μg/m^3 8 hour TWA, as Turpentine). Utilizing a safety factor of 100 for the ACGIH TLV of 111,247 μg/m^3 (10 for intraspecies variability and 10 for continuous exposure) would result in a comparison value of 1112 μg/m^3. Pinene is in a family of chemicals known as terpenes, naturally occurring in many environments (O'Neil 2001). It is a primary component of common turpentine and pine oils. Pinene is

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also used as flavoring in foods, including meat and dairy products (HSDB). Terpene hydrocarbons are of potential concern because they can react with ozone (e.g. from outdoor air or from ozone generating air cleaners) to produce ultrafine particles as well as strong sensory irritants (Hodgson 2002, Malkin-Weber 2009).

Aldehydes: Formaldehyde was used as the prototypical example for aldehydes in this evaluation. No statistical difference was found between formaldehyde levels measured in the Test and Control homes by the EPA/ERT in Florida and Louisiana. With the air conditioning system not operating, the mean value for Test homes was 168ppb (206 $\mu g/m^3$) and 92.2ppb (113 $\mu g/m^3$) for Control homes. With the AC on, the mean value was 56.6ppb (69.5 $\mu g/m^3$) for Test homes and 50.3ppb (61.9 $\mu g/m^3$) for Control homes[1]. No correlation appears to exist between the air exchange rate and measured formaldehyde levels for each home. The highest maximum measured level, 400 ppb (491 $\mu g/m^3$), and maximum mean level 324 ppb (398 $\mu g/m^3$), occurred in Unit 202, the second Louisiana Test home tested. "AC on" data was not collected at this home[2]. For all other sampled homes, the maximum concentration detected was 130 ppb (159.5 $\mu g/m^3$); mean home levels ranged from 89-123 ppb (109-151 $\mu g/m^3$). Although the measurements taken with the air conditioning system operating demonstrate a significant decrease in detected levels, the lower values remain above some of the minimal risk levels listed in Table A below (mean home levels for Test and Control homes ranged from 43-69 ppb, 53-85 $\mu g/m^3$). Outdoor levels ranged from 1.7-5.3 ppb (2.0-6.5 $\mu g/m^3$). Contaminant breakthrough occurred with some of the sampling cartridges during the sampling events for aldehydes, particularly for Louisiana Test home 202 (see Appendix E for further details). Therefore, the reported mean levels for acetaldehyde, butyraldehyde and formaldehyde should be treated as conservative estimated values (i.e., values may be higher).

Table A: Guidelines and Risk Levels for Formaldehyde Exposure

Air Concentration (ppb)	Air Concentration ($\mu g/m^3$)	Health Guideline/Source	Symptoms
80-2,520	100-3,100	Patty's Toxicology	Throat Irritation
2,000	2,454	OSHA STEL, short-term exposure limit, a 15 minute time weighted average, not to be exceeded at any time	
800-1,000	982-1,227	Schacter 1986	Respiratory Irritation Threshold, Ocular Irritation Threshold
8-1,550	10-1,900	Patty's Toxicology	Eye irritation threshold
100-1,000	123-1,227	Bender 1983	Symptoms of throat irritation, fatigue, headache, eye irritation, nausea
50-1,000	60-1,200	Patty's Toxicology	Odor threshold for 50% of exposed people

[1] The FDOH did not measure for formaldehyde in Units 80, 81, 90 & 91.
[2] The air conditioning unit was functioning in LA home 202, however to maintain consistency in the sampling with the 2nd FL test home, the air conditioning remained off.

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Air Concentration (ppb)	Air Concentration (μg/m^3)	Health Guideline/Source	Symptoms
49-1000	60-1,230	Published LOAELs for general population exposure	Based on nasal lesions in workers; eye irritation; increased risk of asthma symptoms in children
980	1,203	NOAEL, no observed adverse effect level for acute exposure	Clinical signs of nasopharyngeal irritation, lesions in nasal epithelium in primates
10-750	12-921	Published NOAELs for general population exposure	Based on nasal irritation & respiratory effects in workers; eye irritation; increased risk of asthma symptoms in children
750	921	OSHA PEL, TWA, not to be exceeded in 1 day	
500	614	Lang 2008	Chemosensory irritation in humans, eye irritation, minimal irritation
400	491	LOAEL, lowest observed adverse effect level for intermediate exposure	
300	368	ACGIH TLV, not to be exceeded in an 8-hour day	
240	295	LOAEL, lowest observed adverse effect level	Histological evidence of mild damage to nasal epithelial tissue in exposed workers
100	123	NIOSH Ceiling REL, not to be exceeded at any time	Acute symptoms in sensitized individuals; exacerbation of chronic symptoms: asthma, other respiratory illnesses
100	123	Health Canada guideline, 1 hour exposure limit	Eye irritation
82	100	WHO 2001, action level, also recommended guideline value as a 30-minute average	To prevent significant sensory irritation in the general population;
44	55	California OEHHA acute REL*	For sensory irritation, irritation to eyes
40	50	Health Canada, 8-hour	Respiratory symptoms in children
40	49.1	ATSDR acute inhalation MRL	
30	36.8	ATSDR intermediate inhalation MRL	
16	19.6	NIOSH TWA, 8 hour	
8	9.8	ATSDR chronic inhalation MRL	
7	9	California OEHHA REL, 8-hour (average time, which may be repeated) and chronic (up to a life-time)*	

*As of December 2008

The issue of formaldehyde exposure in homes is long-standing and has been studied over time. The mean and maximum levels detected in this investigation by EPA/ERT do not differ appreciably from historical reported levels in U.S. homes. A study conducted in 1985 investigated formaldehyde levels in U.S. housing, demonstrating formaldehyde levels averaging 40 ppb (49.1 μg/m^3) with maximum concentrations of 140 ppb (172 μg/m^3). Formaldehyde levels in apartments and condominiums averaged 80 ppb (98.2

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μg/m^3) and 90 ppb (110 μg/m^3) respectively, with maximum concentrations of 290 ppb (356 μg/m^3) (DHHS 2008, Stock 1985). A study of new homes found a mean formaldehyde level of 44.2 μg/m3 in Eastern and Southeastern U.S. site-built homes (Hodgson 2000) and a mean of 94.9 μg/m3 in new Florida homes (Hodgson 2002). The National Human Exposure Assessment Survey by the EPA found a median formaldehyde level of 17 ppb (21 μg/m^3) with a high of 332 ppb (407 μg/m^3) (DHHS 2008, Gordon 1999). A more recent multi-city study of 184 single family homes (DHHS 2008, Weisel 2005) found a mean concentration of formaldehyde in outdoor ambient air of 3 ppb (3.7 μg/m^3) and in housing of 17 ppb (20.9 μg/m^3).

A mean value of ~100 ppb (122.7 μg/m^3) was calculated for all homes except for Louisiana home 202 (where the testing was performed without the air conditioning system operating) which had a mean concentration of 324 ppb (398 μg/m^3). This mean value of 100 ppb falls at the upper end of the "intermediate range" and low end of the "higher range" for the Centers for Disease Control and Prevention designations for FEMA trailers. Occupancy of homes falling with "higher levels" of formaldehyde has been associated with a greater risk of health problems. Acute and chronic health effects of formaldehyde vary depending on the individual. The typical threshold for development of acute symptoms due to inhaled formaldehyde is 800 ppb (981.6 μg/m^3); however, sensitive individuals have reported symptoms at concentrations $\geq$ 100 ppb (122.7 μg/m^3)(HSDB, NTP 2009, DHHS 2008). These sensitive individuals can experience exacerbation of symptoms without the appreciation of odor, giving the individual little or no warning of exposure. Typically, olfactory recognition occurs around 500 ppb (613.5 μg/m^3), meaning the average exposure in these homes was below the olfactory detection limit (DHHS 2008, Weisel 2005). The common symptoms from acute exposure to formaldehyde are irritation of the throat, nose, eyes, and skin. Upper respiratory tract irritation can potentially exacerbate asthma symptoms and other respiratory illnesses (DHHS 2008, Weisel 2002).

The indoor guideline values for formaldehyde, recommended with the intention of preventing acute sensory irritation, vary. In general, the reported thresholds range from 500–1000 ppb (614–1227 μg/m^3)(Salonen 2009, Lang 2008). In order to prevent significant sensory irritation in the general population, the WHO has recommended a guideline value of 100 μg/m^3 as a 30-minute average (WHO 2001). The relative broadness of these guideline values is due to inclusion of various safety factors and whether the health guideline value is addressing shorter or longer exposure (e.g., acute, intermediate or life-time). Although the levels for reported symptoms are generally at formaldehyde concentrations greater than 613.5 μg/m^3, it has been reported that long-term exposure to a formaldehyde concentration of 16 ppb (20 μg/m^3) may be associated with asthma-related and allergy-related health effects. Concentrations above 48 ppb (60 μg/m^3) have been associated with diagnosed asthma (Salonen 2009, NTP 2009, Tang 2009, WHO 2001). There are few case reports of asthma caused by formaldehyde, however significantly greater prevalence rates of asthma and chronic bronchitis were found in children from homes with formaldehyde levels of 70-140 μg/m^3 than in those less exposed, especially in children also exposed to environmental tobacco smoke (WHO 2001). Tang 2009 reported that the likelihood of developing allergic asthma increases

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proportionately with indoor concentrations, especially at concentrations greater than 120 $\mu g/m^3$ (NTP 2009).

Oriented Strand Board (OSB or Chipboard), plywood, medium density fiberboard (MDF or particleboard) products are known to be strong sources of formaldehyde in new homes (Park 2006, Azuma 2002; Dumont 1999; Mann 1999; Yu 1997; Yu 1999). In homes with significant amounts of new pressed wood products, formaldehyde levels can be greater than 300 ppb (368 $\mu g/m^3$, EPA 1997). Other common sources of formaldehyde in the home include use of products such as office equipment, personal care products, carpet, insulation, latex paint, paper products and use of combustion appliances.

Aldehydes are well known irritants. Other aldehydes in addition to formaldehyde were detected in the EPA/ERT and FDOH investigation. It has been known for more than a decade that exposures to a mixture of VOCs present in indoor air can irritate the respiratory tract in both healthy and sensitive individuals (Weisel 2002). Thus, consideration should be given to combined concentrations and not just exposure to individual compounds when evaluating for health effects including exacerbation of existing disease (e.g. asthma).

Sensory Irritation

How Odor Induced Sensory Irritation can Resemble Toxic Responses: Distinguishing between toxic effects and transient sensory irritation is critical to evaluating the possible role that odors may play in occupant reported symptoms. Based upon the primary tenet of toxicology that "dose makes the poison", mere exposure to a chemical does not mean an adverse effect will result. Varying levels of exposure to chemicals are expected to result in varying responses in humans (and other animals), ranging from no adverse effect to severe and life threatening outcomes. Symptoms resulting from a toxic response may be differentiated from transient sensory irritation by the underlying mechanism causing the response. A toxic response is often the result of cellular, tissue, or organ damage that persists after exposure to the causative agent ends. On the other hand, transient sensory irritation is often characterized by upper airway or eye symptoms caused by irritating certain nerve endings in the nose. Typically these symptoms resolve without treatment after exposure ends. Because the trigeminal nerve can be aggravated by many different chemical and physical agents, it is possible that a combination of factors can result in this type of response.

The sense of smell has apparently developed as an early warning system to protect people from detrimental effects of chemical exposure. The general chemical sense is comprised of two sets of nerves that are present in the nose, the olfactory nerve (the first cranial nerve) and the trigeminal nerve. The olfactory nerve relays messages to the brain regarding odor perception. The trigeminal nerve is responsible for sensing the irritation or pungency of a chemical (Shusterman 1992). Although anatomically distinct, both nerves work together to distinguish and characterize chemicals present in the air we breathe. This combination of sensory nerves forms the common chemical sense known as chemesthesis.

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The ability of certain chemicals to activate this early warning system varies depending on their potency, concentration, and duration of exposure. The potency of certain chemicals is based on their water solubility, composition, and functional groups. Many sulfur-containing compounds are potent sensory irritants, reflected by their relatively low odor thresholds. It has been observed that low level volatile organic compounds (VOCs) can be additive and produce irritation at concentrations lower than individual threshold limits (Sullivan 2001). However which chemical combinations and the levels at which they can produce sensory irritation has not been determined.

Nasal exposure to sensory irritants at sufficient concentrations can promote symptoms that include a burning and painful sensation in the nasal passages, head, and cornea by stimulation of the trigeminal nerve endings. This stimulation of the trigeminal nerve can results in a cascade of events resulting in a neurogenic inflammatory response. The signs and symptoms of neurogenic inflammation include sneezing, nasal stuffiness, rhinorrhea, facial pain, eye irritation, watery eyes, headache, sinus congestion, cough, throat irritation, and wheezing (Sullivan 2001).

Examining the Possible Influence of Odors in Sampled Homes: Many of the chemicals found in Test and Control homes are known respiratory irritants and malodorants (having an objectionable odor) when present above certain threshold levels. Where sufficient experimental data are available in the scientific literature, the Technical Team examined if chemicals were present at concentrations that exceeded either their odor or irritant thresholds. Table B below lists the chemicals which were found in homes above their odor threshold.

Table B. Compounds detected approaching or above known odor thresholds

Compound	Mean Concentration, µg/m3		Maximum Concentration, µg/m3		Odor Threshold µg/m3
	AC Off	AC On	AC Off	AC On	
Acetic acid	860	418	1,450	1,106	15
Butanoic acid		1.1	1.3	BDL[+]	1
Formaldehyde	398		491		61
Formic acid	1964		2,879	BDL?	4,188
Furfural	5.74		7.7		7.9 – 2,500
Heptanol	10.7		14.2	BDL	22.7
Hydrogen sulfide			7.3	BDL	1.4 – 181
Nonanal	57.0	23.8	84.2	23.8	12.8
Octanal	39.9		56.0	BDL?	7.3
Pentanal	13.5		23.5	BDL?	21.1
Propanal, 2-methyl (Isobutanal)		7.08		10.10	
Propanioc acid, 2-methyl	123.6	14.5	167	BDL?	5.0
Propanoic acid, 2-methyl-, anhydride		0.47		BDL	10.0
Thiophenes		2.46		3.7	0.56ppb
TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)		1.34		2.1	12.0

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The contribution of each chemical to the distinctive odor reported in some homes experiencing copper corrosion is uncertain. Not all homes experiencing copper corrosion and meeting the Florida DOH Case Definition have this distinctive odor. Similarly many occupants of affected homes do not report experiencing adverse health effects.

The Technical Team found that Test homes had more sulfur-containing and other malodorants at or near their odor thresholds than Control homes. Levels of formaldehyde and acetaldehyde were found at concentrations above their odor thresholds, but below reported limits of respiratory irritation in both Test and Control homes. A confounder for the Technical Team when evaluating the possible health hazards present in affected homes was that similar levels of formaldehyde and acetaldehyde were also found in unaffected Control homes in the study. Formaldehyde has been documented to cause symptoms of respiratory irritation above 100 ppb (123 $\mu g/m^3$). Trigeminal nerve irritation can be caused by formaldehyde resulting in transient sensory irritation.

Potentiation of Sensory Irritation by Malodorous Chemicals: The potential for synergistic effects was considered with the data at hand and the symptoms described by occupants. Specifically, could exposure to sulfur-containing malodorants and formaldehyde or any other irritating compound at the same time cause respiratory irritation at lower concentrations than would be expected?

It is possible that symptoms reported by occupants could be the result of trigeminal nerve irritation. When this nerve is irritated due to chemical exposures it can release substances that are inflammatory and cause dilation of blood vessels.

It has been shown that the presence of objectionable odors increases the sensitivity of trigeminal nerve endings. A study using two sulfur-containing malodorants, ethyl sulfide and t-butyl sulfide, demonstrated that trigeminal nerve sensitivity to other chemical irritants increased. By themselves the sulfur-containing compounds did not cause irritation, but when mice were exposed to levels above the odor threshold of the malodorants their response to a known trigeminal nerve irritant was greatly increased. (DeSesa 2008). In the agricultural and industrial setting, it has been recognized that exposure to air containing multiple malodorants, especially H_2S, can produce trigeminal sensory irritation at sub-threshold concentrations (Schiffman 2000).

The lack of findings that demonstrate indoor chemical concentrations likely to produce a toxic response suggests that alternative explanations of reported symptoms should be examined. Many of the symptoms described by occupants of affected homes coincide with those of trigeminal nerve sensory irritation. Far from conclusive evidence of a cause, this concordance may suggest a possible mechanism that might be further examined as more data becomes available.

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Appendix J

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
1,1-Biphenyl		1.1			
1-Butanol		12.7	9.7	64[a], 190[d]	50[b] 15[d]
1-Butanol, 2-ethyl		0.4	0.11		
2-Butanone (MEK) (J)		6.8	2.6	150[g]	1.03-7[g], 3[b]
2-Butoxy ethanol	5.55	BDL	3.05	12ppb	
4-tert-Butylcyclohexyl acetate (Vertenex)		5.9	4.54		
(+)-Camphene		1.7	1.2		
2-Cyclohexen-1-one, 4-(1-methylethyl)-		2.1	0.82		
1-Decanol	18.8	BDL	7.97		
1,2-Dichloroethane (irritant)	12.5ppb, 50.6	8.33ppb	16.03ppb	3.5g, 5[f]	0.1[f],1.4[g]
2,2-Dimethyl-1-isopropyl-1,3-propanediol monoisobutyrate		7.8	3.7		
2,6-Di-tert-butyl-4-methyl…		0.5			
1-Dodecene		4.0	2.71		
1,2-Ethanediol (Ethylene glycol)		3.0	1.0		
2-Ethyl hexanol	18.7		12.1		
2(3H)-Furanone, dihydro		1.7	1.36		
1-Heptanol		6.2	4.21		
2-Heptanone	7.13		4.88		
4-Heptanone		17.1	1.4		
2-Hexanone		2.1	1.83		
3-Hexanone, 2-methyl		16.0	4.8		
1-Hexanol, 2-ethyl		9.1	8.1		
(S)-2-Hydroxypropanoic acid		6.8	2.6		

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
4,7-Methano-1H-indene,3a,4,7,7a-tetrahydro		1.3	1.06		
1-Methoxy-2-propyl acetate		3.9	2.8		
1-Methoxy-4-(2-propenyl) benzene	6.12	3.6	2.55		
2-Nonanone/ethyl ketone xylene isomer	5.13		1.91		
1,6-Octadiene,7-methyl-3-methylene (Myrcene)		2.6	2.1		
1-Octanol		4.0	3.5		
7-Octen-2-ol, 2,6-dimethyl		3.4	2.8		
2,2-Oxybisethanol	8.43	2.34	6.47		
1-Pentanol		8.1	7.09		
2-Pentanone		0.9	0.8		
2-Pentanone, 4-methyl (Methyl isobutyl ketone, MIBK)		4.0	1.9	9.8[g]	2.2[g]
3-Pentanone, 2,4-dimethyl		18.3	6.7		
3-Penten-2-one,4-methyl		0.5			
1-Pentene	5.1	1.6	3.2		
1,2-Propanediol (Propylene glycol)		4.5	2.1		
2-Propanol (Isopropanol)		3.2	1.0		
2-Propanol, 1-(1-methylethoxy)		3.7	3.1		
2-Propanol, 1-butoxy		3.3	2.7		
2-Propanol, 1-chloro		5.8	4.78		
1-Propanol, 2-chloro-		1.6	1.31		
1-Propanol, 2-methyl		4.9	2,7		
1,1,2,2-Tetrachloroethene	0.174ppb, 1.2	1.5	1.02	47[d], 21[e], 51[f],540[g]	5[d], 2[e], 1[f],9-36[g]

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean (ug/m^3)
	AC Off	AC On			
1,1,1-Trichloroethane	65.8	60.9	25.21	110[f],160-420[g]	2[f],2.3[g]
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate		16.4	7.6		
1-Undecene		2.9	1.3		
Acetaldehyde – (irritant)	16	2.7	6.61		43[c]
Acetic acid (irritant)	1450		1105	226[a]	
Acetic acid, butyl ester	3.9	4.2	3.42		
Acetic acid, 2-methylpropyl ester (Isobutyl acetate)		1.4	1.13		
Acetic acid, phenylmethyl	9.28		7.1		
Acetic acid, propyl ester		1.4			
Acetone	254		208.44	128[e], 115[f],2900[g]	14[e], 42[f],87[g]
Acetophenone	6.48		4.92		
Benzaldehyde	22.1		17.6		3[b], 19[c]
Benzene	5.0		3.4	36[e], 42[g],460[f]	19[c], 4[e], 8[F],3-5[g]
Benzene, 1,2,3,5-tetramethyl		1.8	1.0		
Benzene, 1,2,4,5-tetramethyl		3.2	2.3		
Benzene, 1,3,5-trimethyl (Mesitylene)		5.3	1.86	11[g]	
Benzene, 1-chloro-4-(trifluoromethyl)-		15.0	14.16		
Benzene, 1-ethyl-4-methyl (4-Ethyltoluene)		4.6	3.48		
Benzothiazole		2.1	1.53		
Bicyclo[2.2.1]hept-2-ene, 1,7,7-trimethyl		4.3	1.8		
Bicyclo[2.2.1]heptan-2-ol, 1,3,3-trimethyl		1.7	1.3		

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)		4.2	1.9		
Bicyclo[3.1.1]hept-3-en-2-one, 4,6,6-trimethyl-, (1S)-		2.6	2.02		
Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-, (1à, 3à, 6à)		4.5	0.85		
L-borneol (Bicyclo[2.2.1]heptan-2-ol, 1,7,7-trimethyl-,(1S-endo)-)		3.3	1.5		
Bromoform (irritant)(J)	2.0	1.7	1.86	<5.2[g]	<2.1[g]
Butane	2.3	2.1	1.07		
Butanoic acid		1.3	1.1		
Butanoic acid, 3-methylbut-2-enyl ester		0.9	0.6		
Butanol isomer (irritant)	8.3		3.97		
Butyraldehyde (irritant)	9.73		6.7		7[b]
Butoxy ethanol isomer	2.5		1.15		
Carbon disulfide (irritant)	19.6			4.4[g]	
Carbon tetrachloride(J)	7.0		6.5	2[e] , 4[f]	1[e], 0.4[f],<1-7[g]
Carbonyl sulfide	21.6			<3.1[g]	1.6[g]
d-Carene isomer	17.4		11.92		
Cedrene, à		5.7	0.93		
Chlorodifluoromethane	196	167	124.1		
Chloroform	6.81	9.1	6.3	5.9[g] ,15[e] , 25[f]	2[e], 0.9[f],2.1-7.2[g]
Chloromethane	2.56	2.4	2.17	260[f], 6.2[g]	2[f],1.5[g]
Cinnamic aldehyde (2-Propenal, 3-phenyl-)		3.2	2.03		
Cyclohexane(J)	3.5	1.5	1.21	510[f], 52[g]	6[f], 2.9[g]

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
Cyclohexane, 1,2,3-trimethyl		3.3	1.5		
Cyclohexane, 1,3-dimethyl, trans		1.7	0.7		
Cyclohexane, methyl		4.4	3.1		
Cyclohexasiloxane, dodecamethyl		2.3	0.85		
Cyclohexanone	1.7	BDL	0.84		
Cyclopentasiloxane, decamethyl		30.2	15.01		
Cyclotetrasiloxane, octamethyl		14.8	11.88		
Decahydro methanoazulene isomer		2.5	1.11		
Decanal		4.1	2.51		
Decane, 2,2-dimethyl		7.7	6.43	22ppb[a], 190 (n-decane)[f]	35 (decane)[b], 8 (n-decane)[f]
Decane, 2,6-dimethyl		11.0	6.51		
Decane, 3,6-dimethyl		14.9	5.69		
Decane, 3,7-dimethyl-		12.3	1.23		
Decane, 3-methyl		28.6	10.72		
Decane, 5-methyl		10.9	1.09		
Dichlorofluoromethane	2.0		1.81	300[f]	8[f]
Diethylene glycol (2,2'-oxybisethanol)		4.2	1.6		
Diisopropyl disulfide(J)	94.7		11.9		
Dimethyl cyclohexene isomer(J)		2.48	1.1		
dimethyl decane isomer	3.69		1.74		
Dimethylethylcyclohexanol isomer	5.24	2.87	1.59		
N-Dodecane	4.2		3.14	51[a], 420[f]	38[b], 6[f]
Estragole (4-Allylanisole)		5.6	3.96		

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Literature Values--Maximum (ug/m^3)	Literature Values—Mean (ug/m^3)
	AC Off	AC On			
Ethanol (irritant)	21.1	9.9	15.32	16,000[f]	610[f]
Ethanol, 2-ethoxy		1.1	1.0		
Ethanol, 2-ethoxy, acetate		1.1			
Ethylacetate (irritant)	11.9	12	11.2		
Ethylbenzene	11.6	5.3	10.16	27[e], 340[f], 39[g]	20[b], 3[e],4[f], 3.7-18[g]
Formaldehyde (irritant)	491,160	67.5	398,134		58[b], 95[c]
Formic acid (irritant)	2879		2540		
Furan, 2-pentyl	22.4	BDL	16.6		
Furfural (irritant)	7.7		5.74		
Heptanal (Heptaldehyde)		8.6	7.17	107[a]	25[b], 14[c]
Heptane, 2,2,4,6,6-pentamethyl		19.0	15.79		
Heptane, 2,2,6,6-tetramethyl		10.5	3.25		
Heptane, 2,4-dimethyl	3.4		1.68		
Heptane, 4-ethyl-2,2,6,6-tetramethyl		9.4	3.72		
Heptane, 5-ethyl-2,2,3-trimethyl-		40.8	34.0		
Heptane, 2-methyl		1.9	1.5		
Heptanol	14.2	BDL	10.66		
Hexanal (irritant)	301		91.84	23[a]	267[b]
Hexane	2	1.2	1.7	950[f], 270[g]	10[f], 8.4[g]
Hexane, 1-methoxy		1	0.41		
Hexane, 2-methyl		9.6	3.68		
Hexane, 3-methyl		14.0	4.12		
Hexanoic acid	9.78		7.56	9[a]	

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
Hydrochloric acid (irritant)	0.07	BDL	BDL		
Hydrogen sulfide (irritant)	8.0		2.1		
Isobornyl acetate	4.53	3.3	3.51		
à-Isomethyl ionone		2.1	0.88		
Isopropyl alcohol	92.2	126.8	86.71		
Limonene & isomers	81.4	49	80.7	67 (d-limonene)[a] 273 (d-limonene)[e], 120(d-limonene)[f]	35 (limonene)[b], 40 (δ-limonene)[c], 31(d-limonene)[e], 9(d-limonene)[f]
Longifolene		2.8	1.7		
Menthol	31.2	BDL	6.89		
Menthyl acetate		6.0	2.82		
Methylene chloride	9.1	13.6	8.13	34[e], 2,100[f],94[g]	2[e], 17[f],1.6-5.3[g]
Methylcinnamic aldehyde (2-Propenal, 2-methyl-3-phenyl-)		2.8	1.74		
Naphthalene (irritant)(J)	4.5	4.6	4.19		
Naphthalene, decahydro-1,6-dimethyl-		4.3	1.8		
Nitric acid (irritant)	BDL		BDL		
Nonanal	84.2		57.01	44[a]	47[c]
Nonane		2.1	1.77	89[f]	19[b], 4[f]
Nonane, 2,2,4,4,6,8,8-heptamethyl		0.6	0.18		
Nonane, 3,7-dimethyl		19.6	15.76		
Nonane, 3-methylene		2.7	2.0		
Octanal (irritant)	56.0		39.85	37[a]	44[c]
Octane, 2,3,6-trimethyl		2.7	0.98		

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
Octane, 2,4,6-trimethyl		26.7	16.57		
Octane, 2,5,6-trimethyl		20.7	9.7		
Octane, 2,6-dimethyl		3.0	2.08		
Octane, 3-ethyl-2,7-dimethyl		11.5	7.46		
Octanol	11.6		8.68		
Pentadecane(J)	7.14	BDL	2.0		
Pentanal	23.5	17.6	13.46		73[c]
Pentane	12.7	9.7	9.92		
Phenol (irritant)	5.62	4.07	4.85	15[a]	
Pinene & isomers	669		541	478 (α- and β-)[a], 141[e], 91 (α-)[f]	269 (α-)[b], 306 (α- and β-)[c], 10[e], 6[f]
Pinene, à (2,6,6-Trimethyl-bicyclo[3.1.1]hept-2-ene)		79.5	68.46		
Pinene, á (6,6-Dimethyl-2-methylene-bicyclo[3.1.1]heptane)		39.5	31.54		
Propanal, 2-methyl		10.1	7.1		
Propanoic acid		2.6			
Propanoic acid, 2-methyl-,2,2-dimethyl-1-(2-hydroxy-1-….	150		110.15		
Propanoic acid, 2-hydroxy-, ethyl ester		7.0	1.54		
Propanoic acid, 2-methyl	167		123.63		
Propanoic acid, 2-methyl anhydride					
Propionaldehyde (irritant)	15.9		10.24		8[b]
Siloxane compound		933	341		
Styrene (irritant)(J)		6.3	5.18	60[a], 24[e], 50[f],5.1-9[g]	64[b], 1[e], 1[f],1.6[g]

Comparison of compound concentrations from EPA/ERT and FDOH sampling with available published concentrations found in newer homes (U.S. and Japan)

Compound	Maximum Concentration (ug/m^3)		Mean Concentra-tion (ug/m^3)	Literature Values Maximum	Literature Values Mean
	AC Off	AC On			
Styrene, 2,4-dimethyl		1.7	0.8		
Styrene, 2,5-dimethyl		2.6	1.7		
Sulfur dioxide (irritant)	16.8	(.2)	(.11)david's		
Sulfuric acid (irritant)	0.05 mg/m3	BDL	0.18		
N-Tetradecane	14.7		6.09		
Thiophene, 2-hexyl		3.7	2.46		
Thujopsene		1.8	1.39		
Toluene		15.4	12.49	109[a], 122[e], 510[f]	27[b], 15[e], 26[f],25[g]
Trichlorofluoroethane	0.718ppb?	0.767ppb?	0.35ppb		
Trichlorofluoromethane	11.9	12.6	6.01	190[f],62[g]	8[f],4.7[g]
Trichloropropane isomer		42.81	2.05		
Trimethyl benzene isomer	10.5		9.49	11[g]	
Trimethyl pentene isomer		1.67	0.84		
TXIB (2,2,4-Trimethyl-1,3-pentanediol diisobutyrate)		2.1	1.3		
Undecane		13.3	10.81	57[a],290[f]	5[f]
Undecane, 2-methyl		7.4	1.34		
Undecane, 4-methyl		8.7	1.61		
Vinyl acetate	8.52		6.62		
Xylene (para and/or meta)		20.3	16.69	52[a], 75[e],550[f]	30 (para)[b], 7[e], 6[f]
Xylene, ortho		8.1	6.75	23[e], 310[f]	3[e], 4[f]
Xylene & isomers (irritant)	20.3	13.6	14.59	38,91[g]	3.9,10.2-33[g]

[a]new site-built homes 1-2 months old (U.S.) [Hodgson 2000]; [b]Japanese homes < 6 months old Park 2006]; [c]new manufactured home (U.S.) [Hodgson 2002]; [d]Japanese homes built within "the last few years" [Saijo 2004]; [e]3 U.S. cities (Los Angeles CA, Houston TX, and Elizabethtown NJ 1999-2001 [Weisel 2005], [f] NY testing of homes that heat with fuel oil (1997-2003), [g]Weisel 2006 [http://www.health.state.ny.us/environmental/investigations/soil_gas/svi_guidance/docs/svi_appendc.pdf]

Appendix K

PRELIMINARY DRYWALL INVESTIGATION GUIDANCE

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List of Acronyms

AC	Air Conditioning
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COPC	Contaminants of Potential Concern
CPSC	Consumer Product Safety Commission
EPA	Environmental Protection Agency
ERT	Environmental Response Team
FLDOH	Florida Department of Health
g	gram
GC/ECD	Gas Chromatograph/Electron Capture Detector
GC/MS	Gas Chromatograph/Mass Spectrometer
HQ	Headquarters
H_2S	Hydrogen Sulfide
H_2SO_4	Sulfuric Acid
LADHH	Louisiana Department of Health and Hospitals
LCD	Liquid Crystal Display
L/min	Liters per minute
mg	milligram
mL	milliliter
mm	millimeter
N	Normal
NIOSH	National Institute of Occupational Safety and Health
NIST	National Institute of Standards and Technology
NJ	New Jersey
OSHA	Occupational Safety and Health Administration
PAH	Polynuclear Aromatic Hydrocarbons
PC	Personal Computer
PCB	Polychlorinated Biphenyls
ppb	parts per billion
ppm	parts per million
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
SAP	Sampling and Analysis Plan
SO2	Sulfur Dioxide
SOP	Standard Operating Procedure
SPM	Single Point Monitor
Sr	Strontium
SVOC	Semivolatile Organic Compounds
TIC	Tentatively Identified Compounds

List of Acronyms (cont'd)

TO	Toxic Organic
TOC	Total Organic Carbon
US	United States
v	volts
VOC	Volatile Organic Compounds
WHO	World Health Organization
XRF	X-ray Fluorescence
ºC	degrees Centigrade
%RH	Percent relative humidity

1.0 EXECUTIVE SUMMARY

Occupants of homes built with imported (Chinese) drywall have reported adverse health symptoms and corrosion of indoor metals. The Consumer Product Safety Commission (CPSC) is the lead Federal agency. The United States (US) Environmental Protection Agency Environmental Response Team (EPA/ERT) was requested to conduct indoor air testing by the Agency for Toxic Substances and Disease Registry (ATSDR), the Florida Department of Health (FLDOH), and the Louisiana Department of Health and Hospitals (LADHH).

This document provides guidance for the monitoring and sampling of indoor and ambient air for future testing for the presence of the contaminants of potential concern (COPC). These drywall investigation guidance are based on the work performed on drywall samples and indoor air monitoring/sampling conducted in a total of six houses (four houses with imported drywall and two houses with US manufactured drywall) in Florida and Louisiana. The analytical target compounds and suggested analytical methods are being provided to the CPSC so that Federal and State Agencies will be able to conduct their own drywall investigations. It is not within the scope of this document to provide a generic air sampling plan. Based on recommended methods, the individual entities conducting the drywall investigation will prepare their own Quality Assurance Project Plans (QAPPs) or Sampling and Analysis Plans (SAPs) to meet project or agency goals.

Based on the drywall chemical analysis, and air monitoring and sampling activities conducted during June and July, 2009 in Florida and Louisiana, EPA recommends that the procedures outlined in this document be used to conduct further extensive drywall investigations in potentially impacted states. The investigator may decide during the monitoring and sampling process that there is sufficient information/data to conclude that the home is adversely affected by the installed drywall and more extensive air monitoring for hydrogen sulfide (H_2S) and/or sampling for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs) and aldehydes and ketones may not be necessary.

2.0 INTRODUCTION

Drywall from China was imported to address the shortage of essential construction materials created following record-breaking 2004 and 2005 hurricane seasons and a national demand for new home construction. Based on press report estimates, as many as thousands of houses may have been affected; it is uncertain how many homes have this specific drywall. According to the newspapers, the imported drywall contains reduced sulfur compounds, which are suspected to be the basis for the complaints. It has been reported that as the drywall is exposed to elevated levels of humidity, as well as elevated temperatures, the product may be off-gassing sulfur-based gases that have been associated with the odor, health, and corrosion complaints. Compounds reported to be detected in the suspect drywall include reduced sulfur compounds.

Consumers have reported blackened and corroded metal in their homes, in addition to premature failure of central air conditioning evaporator coils located indoors in the air handling unit and intermittent failure of appliances and/or electronic devices. Visual examination of electrical wiring in suspect homes and the presence of blackened sooty material on electrical wires have been noted by CPSC staff during inspections (CPSC 2009). Tarnishing and pitting of metallic surfaces was also observed in some of the affected homes in Florida and Louisiana.

Various health-related symptoms including cough, bloody and runny noses, headaches, difficulty in breathing and irritated and itchy eyes and skin have been reported by homeowners. These homeowners report that the symptoms lessen or go away when they leave the home and return upon re-entry (CPSC 2009).

The ATSDR contacted the EPA/ERT for analytical assistance with the Chinese-manufactured drywall used in Florida. ATSDR, with concurrence from FLDOH and LADHH, requested that the ERT conduct an elemental analysis of both Chinese and US-manufactured drywall. Two drywall samples collected from two homes in Florida were selected by the FLDOH to be sent to ERT for analysis. Four samples of US-manufactured drywall were purchased from local home improvement stores in Edison, New Jersey (NJ). Five additional drywall samples were then collected and analyzed from two homes in Florida, one home in Louisiana, a warehouse in Virginia and a warehouse in Louisiana to confirm the previous findings. CPSC also requested that ERT conduct elemental analysis and provided fifteen samples of uninstalled drywall from a variety of sources, including imported drywall, domestic calcined drywall, and domestic synthetic drywall collected from warehouses, suppliers, and manufacturers.

The analytical procedures outlined in this guidance are based on the analysis of the drywall samples, air monitoring performed in Florida and Louisiana, air sampling and drywall analysis performed by other organizations for builders, conversations with home owners, and literature searches

2.1 Initial Six Drywall Sample Analysis Reported on May 7, 2009

The two Chinese and four US-manufactured drywall samples were analyzed to determine what compounds may be affecting the homeowners. Prior to analysis, the thin layer of paint was scraped off of the two Chinese drywall samples for metals analysis. The paper was then separated from the drywall gypsum material. The paper portions of the samples were analyzed for metals, formaldehyde and semi-volatile organic compounds (SVOCs). The gypsum portions of the samples were analyzed for metals, SVOCs, VOCs, formaldehyde, elemental sulfur, alkalinity as carbonate and bicarbonate, sulfides, sulfates, water soluble chlorides, pH, total organic carbon (TOC) and Loss of Ignition (LOI). The significant differences between the Chinese-manufactured and US manufactured drywall samples were as follows. The ERT chemical analysis showed the presence of elemental sulfur and strontium in the imported drywall samples. Elemental sulfur was not detected in the US-manufactured samples. Elemental sulfur was present in the Chinese drywall samples at concentrations up to 100 parts per million (ppm)

and strontium at over 2,500 ppm, which is at least twice what was measured in US drywall. In addition to the chemical analysis, it was observed that the gypsum used in the two imported drywall samples are grayish in color and have a characteristic smell of sulfur/burnt match and/or vinegar. At the present time, there are no available US standards for strontium or elemental sulfur levels in drywall.

2.2 Additional Five Drywall Sample Analysis Reported on August 25, 2009

The analysis shows the presence of elemental sulfur and strontium in four out of five imported drywall gypsum portions of the samples ranging from 71.4 ppm to 419 ppm, and from 3,030 ppm to 4,110 ppm, respectively. No elemental sulfur was detected in the fifth gypsum sample collected from the warehouse in New Orleans, but Sr was detected at a concentration of 401 ppm, approximately 10 times less than that found in the other gypsum samples. Elemental sulfur was also detected in the paper portion of the four imported drywall samples ranging from 41.7 ppm to 454 ppm. The presence of elemental sulfur could be attributed to the sulfur leaching out from gypsum or it may have been added in some form during the manufacturing process.

The additional drywall and paint samples collected from the homes from Florida and Louisiana contained several organic compounds of interest to the EPA/ERT. Liquid paint was collected from the same paint cans used to paint the walls. Analytical results demonstrated the presence of two organic compounds in the three liquid paint samples collected from the two homes in Florida and the one home in Louisiana. The same two organic compounds were found in the painted imported gypsum portion of the drywall samples. The two compounds tentatively identified by the mass spectrometry library search were propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester (CAS # 74367-33-2) at estimated concentrations ranging from 1.78 to 10.6 ppm, and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester (CAS # 74367-34-3) at estimated concentrations ranging from 4.04 to 10.7 ppm in the gypsum portion of the drywall. These compounds were also detected in the paper portion of the drywall sample collected from the Louisiana home. These two compounds were at a much higher concentration in the liquid paint (can) samples than that found in the gypsum portion of the drywall (1000-fold higher). The results of the investigation show that these two compounds are most likely components of the paint and not of the gypsum. The presence of these two compounds in the gypsum portion may be attributed to absorption of off gases from these two organic compounds found in the paint.

The headspace screening analysis conducted on drywall (gypsum core) for reduced sulfur compounds shows the presence of hydrogen sulfide, carbonyl sulfide and carbon disulfide in the drywall samples collected from homes in Florida and Louisiana and the warehouse in Virginia. When the drywall was subjected to wet conditions, the H_2S concentration dropped while the carbonyl sulfide and the carbon disulfide concentrations increased. Additional investigations are recommended to confirm these findings.

2.3 Louisiana and Florida Monitoring/Sampling

A total of six homes were selected in Florida and Louisiana for air monitoring/sampling in consultation with FLDOH, LADHH and EPA Headquarters (HQ). A total of four sampling events were performed in each house (two sampling events with the air conditioning [AC] off and two sampling events with the AC on). Concurrent ambient air samples were collected during each event. Real-time continuous monitoring was performed for total VOCs, H_2S, sulfur dioxide (SO_2), sulfuric acid (H_2SO_4), carbon monoxide (CO), carbon dioxide (CO_2), temperature and relative humidity, at two locations in the home (living room and bedroom) and one outside of the home. Air sampling was performed at the same locations and analyzed using appropriate analytical methods for VOCs (EPA Method TO-15 and Modified National Institute for Occupational Safety and Health [NIOSH] 1500, 1501 & 1003), PAHs (Modified NIOSH 5515), inorganic acids (Modified NIOSH 7903), aldehydes/ketones (EPA TO-11A), aliphatic (NIOSH 2010) and aromatic amines (NIOSH 2002) and sulfur-containing compounds such as H_2S, carbonyl sulfide, carbon disulfide, dimethyl sulfide, dimethyl disulfide and mercaptans (American Society for Testing and Materials [ASTM] D5504-08). Air samples were also collected in the wall cavities (i.e., inside a cable outlet, inside an electrical outlet, inside of a closet wall) in these homes and analyzed for VOCs (TO-15) using SUMMA canisters, and for H_2S, carbonyl sulfide, carbon disulfide, dimethylsulfide and dimethyldisulfide using Tedlar® bags. During the Louisiana sampling events, samples were also collected for formic and acetic acids (Occupational Safety and Health Administration [OSHA] ID 186SG). The organic acids were added for Louisiana sampling event due to the acetic odor noted during a prior visit. In addition, pesticides/polychlorinated biphenyl (PCB) sampling and analysis using EPA Method TO-10A was performed in Louisiana.

2.4 Louisiana and Florida Monitoring/Sampling Results

The real-time monitoring results for the houses in Florida showed the presence of H_2S in indoor and in outdoor air. While the water sprinklers were on, a strong odor of rotten eggs was noted outside of the house due to the presence of H_2S; however, the odor of H_2S inside the house was not as strong. There was a definite noxious odor in the test houses that is probably due to a combination of several organic/inorganic compounds.

Air samples were analyzed for reduced sulfur compounds collected in all six units in Florida and Louisiana with a detection limit of 5.0 parts per billion (ppb). The results show the absence of reduced sulfur gases in units 100, 101, 102, 200, 201 and 202, except during the Night 2 sampling event when carbonyl sulfide ranged from ND to 8.8 ppb and carbon disulfide ranged from ND to 6.3ppb. It should be noted that the sprinkler system came on during this sampling event.

Water was collected indoors and outdoors using dehumidifiers in the selected houses. In Florida, the indoor copper concentrations were 39 to 51 times higher than that found outdoors. In Louisiana, the copper concentrations were 6 to 23 times higher indoors than outdoors. The data demonstrate that there appears to be an acidic vapor (organic/inorganic) presence in the house

possibly causing erosion of copper coils in dehumidifiers. It should be noted that the copper concentrations found in the condensates collected in the control homes were not the lowest detected, suggesting that there may be other factors influencing the results besides the type of drywall present in the homes.

The air sampling results show the presence of formaldehyde in four test houses and also in two background houses in Florida and Louisiana at levels equal to or greater than 100 ppb. The formaldehyde levels in one test house in Louisiana were measured at 400 ppb. The World Health Organization (WHO) guideline for formaldehyde is 100 $\mu g/m^3$ or 81.4 parts per billion by volume (ppbv) as a 30-minute average. Predominant sources of formaldehyde and other aldehydes can be found in building materials, carpets, draperies and subfloors, and in wood fillers and some types of adhesives. Further investigations are necessary to determine the sources of formaldehyde in the test houses and background houses.

The two organic compounds found in the three paint samples collected from homes in Florida and Louisiana were also detected in condensate (water from dehumidifiers) and in indoor air. These compounds were tentatively identified by the mass spectrometry library search as propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester (CAS # 74367-33-2) and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester (CAS # 74367-34-3) and were detected at higher concentrations in the test houses than in the background houses. These two compounds are commonly found in indoor air.

Isomers of pinene were detected in the test houses and in the background houses. The presence of pinene isomers may be attributed to wood flooring and other compressed wood material.

Low levels of target compound VOCs were detected in indoor air samples collected from all six houses; the target VOC compounds detected are ones generally found in indoor air. Acetic acid and formic acid were detected at low concentrations in three houses in Louisiana (test house and background houses). Sampling and analysis of acetic acid and formic acid was added due to the presence of an acetic acid-like odor detected in one of the test houses in Louisiana during a pre-screening visit.

Based on the drywall chemical analysis, and air monitoring/air sampling results conducted during the months of June and July in Florida and Louisiana, EPA recommends the following procedures for investigating drywall complaints: 1) Real time monitoring for hydrogen sulfide; 2) Sampling of drywall for elemental sulfur and strontium; and 3) Air sampling for VOCs, PAHs and aldehydes and ketones. Although target VOCs and PAHs were not found, tentatively identified compounds (TICs) for both parameters were noted during the mass spectral library search and may be a potential indicator of imported drywall. A data analysis of these non-target compounds is currently in progress. Based on the results of the analysis, EPA may decide to modify/delete some of the parameters recommended in this guidance. The Federal and/or State investigators may also at any time during the process decide that there is sufficient information to conclude a problem exists with the drywall and extensive air monitoring and/or

sampling may not be performed. The recommended drywall investigation guidance is provided in Figure 1.

3.0 RECOMMENDATIONS FOR FUTURE DRYWALL ASSESSMENTS

3.1 Strategy for Selecting Units

The FLDOH published a case definition on March 31, 2009 for premature copper corrosion possibly associated with imported drywall. To meet the current case definition, homes constructed from 2004 to present must meet two or more of the conditions specified below and those homes built prior to 2004 must meet three of the following conditions.

1. Presence of sulfur-like or unusual odors
2. Confirmed presence of imported drywall in the homes
3. Observed copper corrosion (black sooty coating) of un-insulated copper wire leading to the air handling unit in the garage or mechanical closet of the home
4. Documented failure of the air conditioner coil (located inside of the air handling unit)
5. Confirmation by an outside expert or professional for the presence of premature copper corrosion on un-insulated copper wires and/or air conditioner evaporator coils.

3.2 Visual Drywall Inspection

The Federal or State entities will obtain signed access agreements to each of the homes selected. The eligible residential units should be characterized using checklists or survey guidance for information such as age of construction (or rebuild, remodel), square footage, number of rooms, replacement history of appliances, air conditioning units, electronics, etc.

The house should be inspected to ascertain whether it contains imported drywall or domestic drywall by first inspecting the back of drywall for any markings at various locations in the home based on judgment of the investigator. A small hole should be drilled at a few locations to facilitate the collection of the gypsum portion of the drywall for further observation and chemical analysis as discussed in section 4.6.

3.3 Drywall Sampling

Upon inspecting the home, if the investigator determines that the house meets the case definition listed in Section 3.1, five drywall samples (approximately 10 g of gypsum core-) should be collected into 40-milliliter (mL) VOC vials from the subject home and examined visually for color and odor. Use professional judgment to pick two of the drywall (gypsum core) samples collected and analyze for elemental sulfur (to determine if the concentration is >15 ppm) and strontium (to determine if the concentration is >2300 ppm), which are indicators of imported drywall found in most of the samples analyzed thus far.

3.4 Air Monitoring and Sampling

Sufficient data should be obtained with real-time instruments during the initial entry to screen the home for the H_2S. If an investigator determines that air sampling is necessary in homes with noxious odors and metal corrosion, air sampling should be conducted at two locations in the house and at one outdoor ambient air location for a minimum of 24 hours consisting of two sampling events each of at least 8-12 hour duration, one event with the AC off. Typically locations should be chosen based on use of areas within a home and rooms in which potentially sensitive receptors (i.e., children, the elderly, and people with existing respiratory conditions) sleep, play or spend most of their time. Sampling should typically be conducted at breathing height approximately 3 to 4 feet for children's rooms or 4-5 feet for the general population. If homes are located within close proximity of each other, it may be feasible to select one ambient air location for both residences.

4.0 AIR MONITORING AND DRYWALL INVESTIGATION INSTRUMENTS

4.1 Hydrogen Sulfide Instruments

Continuous air monitoring for H_2S, temperature and humidity in the home and outside of the home should be conducted using calibrated air monitoring instruments specific for these parameters. There are several types of air monitoring instruments on the market that can be used. The selection of the air monitoring instrument should be based on availability, detection limit required, and ease of use. Detailed descriptions for several types of H_2S monitoring instruments are discussed below. It should be noted that the following instruments represent a small fraction of those available. The mention of trade names or commercial products does not constitute U.S. EPA endorsement or recommendation for use.

The Single Point Monitor (SPM) or tapemeter (e.g., Zellweger Analytics) employs a specially treated cloth tape reel called a "Chemcassette" and an electronic key called a "Chemkey" for the monitoring of H_2S. The Chemkey stores setup information and other functional information (i.e. flow rate, alarm levels and compound concentration times) needed for accurate detection of target gases. The Chemcassette is a medium onto which a known quantity of ambient air is concentrated. The use of the Chemcassette as a concentration media allows the instrument to see a variety of compounds in some cases down to the low ppb range. When the tapemeter is monitoring, the tape from the Chemcassette is drawn into the "read head" where it is exposed to a predetermined amount of ambient air. If the target gas is present the tape responds with a color change in proportion to the concentration of the target gas present. The tapemeter reads this color change and through the Chemkey converts the observed color change into the concentration which is sent to the SPM's LED display. The range and detection limits of the SPM are determined by the pre-programmed Chemkey specific for an analyte or a group of analytes.

Hydrogen sulfide monitors (e.g., Arizona Instruments Jerome 631-X) operate on the principle that electric resistivity increases across a gold film as a function of H_2S concentration. The monitors provide rapid and relatively low detection limits for H_2S in air. While the units have similar cross-interferents, internal filters are used to minimize them. An external data logger allows for data acquisition during surveys or unattended sampling without a computer. Data may be downloaded after the monitoring event.

The following table compares the range or detection limits for the previously discussed H_2S monitoring instruments.

Monitoring Parameter	Instrument	Range or Detection Limit
H_2S	Zellweger SPM	2 - 90 ppb (low range) 53 – 1500 ppb (MVIP range)
H_2S	Jerome 631X	3 – 99 ppb (low range) 3 ppb detection limit @ 30 second response time

Based on the data obtained from real-time air monitoring in Florida and Louisiana, H_2S appears to be the major target compound of concern; therefore, real-time monitoring options for VOCs, SO_2 and H_2SO_4 are not included in this guidance.

4.2 Temperature and Humidity Monitoring

For temperature and humidity monitoring, a digital humidity temperature meter (e.g., Omegaette HH314) is applicable for measurements obtained in a zero to 50 degrees Celsius ($^{\circ}$C) environment with a maximum relative humidity (RH) of 90%. Temperature is measured using either a semiconductor sensor or a K-type thermocouple, and % RH using a polymer capacitive. Results are digitally displayed on the liquid crystal display (LCD) screen. The instrument can be operated with either a 9-Volt (v) battery or a 9-v alternate current adapter. Data are stored in the internal memory (up to 16300 readings). A RS-232 interface provides bi-directional communication with a personal computer (PC). The information is not critical to evaluate potential drywall impacts; however, it is good practice to conduct these secondary measurements as part of any drywall investigation.

Pocket PC running appropriate application software (e.g., GrayWolf IQ410) provides indoor air quality measurements. The percent RH is measured by absorption or desorption of moisture by a thin polymeric film. As the relative humidity changes so does the dielectric property of the film changes and the capacitance of the sensor. Relative humidity can be measured from 0 to 100%. For temperature, resistance over a platinum element is measured. Platinum sensors are highly accurate over a wide temperature range (-10 to 70°C).

4.3 XRF Screening

XRF screening may be used for strontium analysis in the field as an indicator for imported drywall to determine if the concentration exceeds 2300 ppm. Samples may be analyzed in-situ with an XRF instrument such as a NITON XLt792YW with proper X-ray tube/filter selection, application setup, measurement conditions, and instrument calibration. An Innov-X 4100SL XRF unit may also be used which is a hand-held, battery operated energy dispersive X-ray fluorescence analyzer used in the detection and quantification of elements. Miniaturized X-ray tube technology is used by the Innov-X System XRF instrument for the production of primary X-rays.

A gypsum core sample is positioned in front of the X-ray tube/detector window and sample measurement is initiated. This exposes the sample to filtered primary radiation. Fluorescent and backscattered X-rays from the sample enter through the detector window and are counted by the high-performance, solid-state detector. Elemental concentrations are computed based on ratios of analyte X-ray intensity to backscatter. The raw ratios are corrected for spectral overlap and inter-element effects.

5.0 AIR SAMPLING METHODS

5.1 Volatile Organic Compound Sampling

VOC sampling should be conducted to determine the types of non-target compounds that may help gain insight into the potential sources of VOCs that may be responsible for the odor complaints. Ambient air sampling should be conducted following the modified NIOSH Method 1500, *Hydrocarbons, BP 36-126 EC*, Method 1501, *Hydrocarbons, Aromatic* and Method 1003, *Hydrocarbons, Halogenated*. The sampling train consists of a 600-milligram (mg) charcoal solid sorbent tube connected to a low flow personal sampling pump. The sampling pump should be calibrated to collect approximately 1.0 liter per minute (L/min) of air through the sorbent tube for 8-12 hours for a total of 480- 720 L. Modifications to the NIOSH sampling methods include the use of a 600-mg sorbent tube instead of a 150 mg tube and a flow rate of 1.0 L/min instead of the 0.2 L/min listed in the NIOSH methods.

5.2 Polynuclear Aromatic Hydrocarbon Sampling

PAH sampling is being conducted to determine the types of non-target compounds that may help gain insight into the potential sources of organic compounds that may be responsible for the odor complaints. In addition to that PAH sampling was retained in this guidance to identify TICs specifically propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester (CAS # 74367-33-2) and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester (CAS # 74367-34-3). Ambient air sampling for PAHs should be conducted following modified NIOSH Method 5515, *Polynuclear Aromatic Hydrocarbons*. The sampling train consists of a 600-mg washed XAD-2 sorbent tube and 37-millimeter (mm) Teflon® (PTFE) filter connected to a personal sampling pump (SKC). The sampling pumps should be calibrated

to collect approximately 1.0 L/min of air through the sorbent tube and filter for approximately 8-12 hours for a total of 480 to 720 L. Modifications include the use of a 600-mg XAD tube instead of the 150-mg tube and a lower flow rate of 1.0 L/min as opposed to the 2.0 L/min listed in the method.

5.3 Aldehyde/Ketone Sampling

Ambient and indoor air sampling for aldehydes/ketones should be conducted using EPA Method TO-11A, *Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Pressure Liquid Chromatography (HPLC)*. The sampling train consists of a 150/300 mg silica gel tube treated with 2,4-dinitrophenylhydrazine (DNPH) connected to a personal sampling pump. Although EPA Method TO-11A recommends a flow rate of 1.0 L/min through one cartridge, the sampling pump should be calibrated to collect approximately 0.25 L/min of air through the tube for approximately 4 hours or 0.5 L/min for 2 hours for a total of 60 L to minimize breakthrough, which was noted during the Florida and Louisiana sampling events. Multiple pumps set on various time delays may be used to encompass the whole 8-12 hour sampling period.

5.4 Condensate Water Collection

One dehumidifier should be placed inside the house and one outdoors. Ten mL of 1.0 Normal (N) sodium hydroxide is added to the tray in each dehumidifier. The condensate water is collected and analyzed for copper and SVOCs. The copper results from the water collected indoors and the water collected outdoors should be compared. If the concentration of copper is higher in the indoor condensate, acid vapors are present and copper is leaching from the dehumidifier copper coils. At this time, sufficient data have not been collected to determine the useful life of each dehumidifier. The investigator must closely monitor the condition of dehumidifier and decide when to replace the dehumidifier. At this time, it is recommended that the dehumidifier be replaced after use at three houses, if a visual inspection indicates that there is a drastic change in the coloration of the copper coils, or analytical results obtained from both the test and control houses are questionable.

6.0 ANALYTICAL METHODS

The analytical methods were modified to accommodate these sample matrices as standard methods were not available in the area of sample digestion/preparation procedures. The ERT/REAC standard operating procedures (SOPs) cited in this guidance may be found at http://www.epaosc.org/site/site_profile.aspx?site_id=2107. Any modifications to these methods are discussed in Section 6.0, Analytical Methods.

6.1 Drywall Analytical Methods

The ERT/REAC Laboratory has developed a screening analytical method (draft REAC SOP #1744, *Field Analysis of Sulfur in Drywall by GC/ECD)* to determine elemental sulfur concentrations. The screening method is very fast and effective and has a reporting limit (RL) of approximately 150 parts per billion (ppb). Strontium can be analyzed using REAC SOP #1811, *Determination of Metals by Inductively Coupled Plasma (ICP) Methods* or EPA Method 6010B. Microwave digestion was used for the preparation of drywall samples for subsequent metals analysis. EPA Method 3051A, *Microwave Assisted Acid Digestion of Sediments, Sludges, Soils, and Oils* can be found at http://www.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/3051a.pdf

6.2 Air Analytical Methods

The following methods should be used to analyze ambient and indoor air samples. It should be noted that the NIOSH methods for VOCs and PAHs have been modified to incorporate the use of a Gas Chromatograph/Mass Spectrometer (GC/MS) to execute a library search for non-target compounds present in method blanks and samples for the purpose of tentative identification. In this case, the National Institute of Standards and Technology (NIST) Mass Spectral Library (or equivalent) should be used for identification search.

Parameter	Method	Matrix
VOCs (Sorbent Tubes)	SOP #1816, *Indoor Air Analysis of Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (Including up to 30 TICs)	Air
PAHs (Sorbent Tubes)	SOP #1817, *Analysis of Polynuclear Aromatic Hydrocarbons (PAHs) in Air by GC/MS* (Including up to 30 TICs)	Air
Aldehydes/Ketones	EPA Method TO-11A, *Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Pressure Liquid Chromatography (HPLC)*	Air

TICs = Tentatively Identified Compounds

6.3 Water Condensate Analytical Methods

The following methods should be used to analyze the water condensate samples collected from the dehumidifier trays:

Parameter	Method	Matrix
Metals, i.e., Copper	REAC SOP #1811, *Determination of Metals by Inductively Coupled Plasma (ICP) Methods* or EPA Method 6010B	Water
SVOCs	REAC SOP #1804, *Routine Analysis of Semivolatiles in Water by GC/MS* or EPA Method 8270C (Including up to 30 TICs)	Water

TICs = Tentatively Identified Compounds

7.0 MAINTENANCE, CALIBRATION AND TESTING

Equipment used for sampling and monitoring should be inspected, cleaned and tested. Equipment used for the generation, measurement and assessment of data should also be adequately tested, calibrated and/or standardized. Sampling pumps should be calibrated on a routine basis and prior to use. A rotameter can be used provided it has been calibrated with a primary calibrator. Sampling pumps should be calibrated prior to coming on-site in order to expedite on-site calibration. However, calibration must be verified on-site prior to use. The frequency for calibration and testing should be based on the manufacturers' recommendations and be included in the project-specific QAPP or SAP.

8.0 QUALITY ASSURANCE/QUALITY CONTROL CONSIDERATIONS

Quality Assurance/Quality Control (QA/QC) samples provide information on the variability and usability of environmental sample results. QA/QC samples should be collected to detect error. QA/QC samples are submitted with the field samples for analysis to aid in identifying the origin of analytical discrepancies; then a determination can be made as to how the analytical results should be used. Collocated samples, background samples, field blanks, and lot blanks are the most commonly collected QA/QC field samples. QA/QC results may suggest the need for modifying sample collection, preparation, handling, or analytical procedures if the resultant data do not meet site-specific QA or data quality objectives. Official custody of samples must be maintained from the time of collection to final deposition. In the case of litigation, the chain of custody (COC) record would be evaluated to ensure that sample integrity was maintained from the time of sample collection to completion of analysis.

9.0 INVESTIGATION REPORT

An investigation report should be prepared based on the findings at each home. The results of the investigation should be provided to appropriate agency/department for health-related decisions and for dissemination to the homeowners.

10.0 REFERENCES

Consumer Product Safety Commission. 2009. http://www.cpsc.gov/info/drywall/where.html

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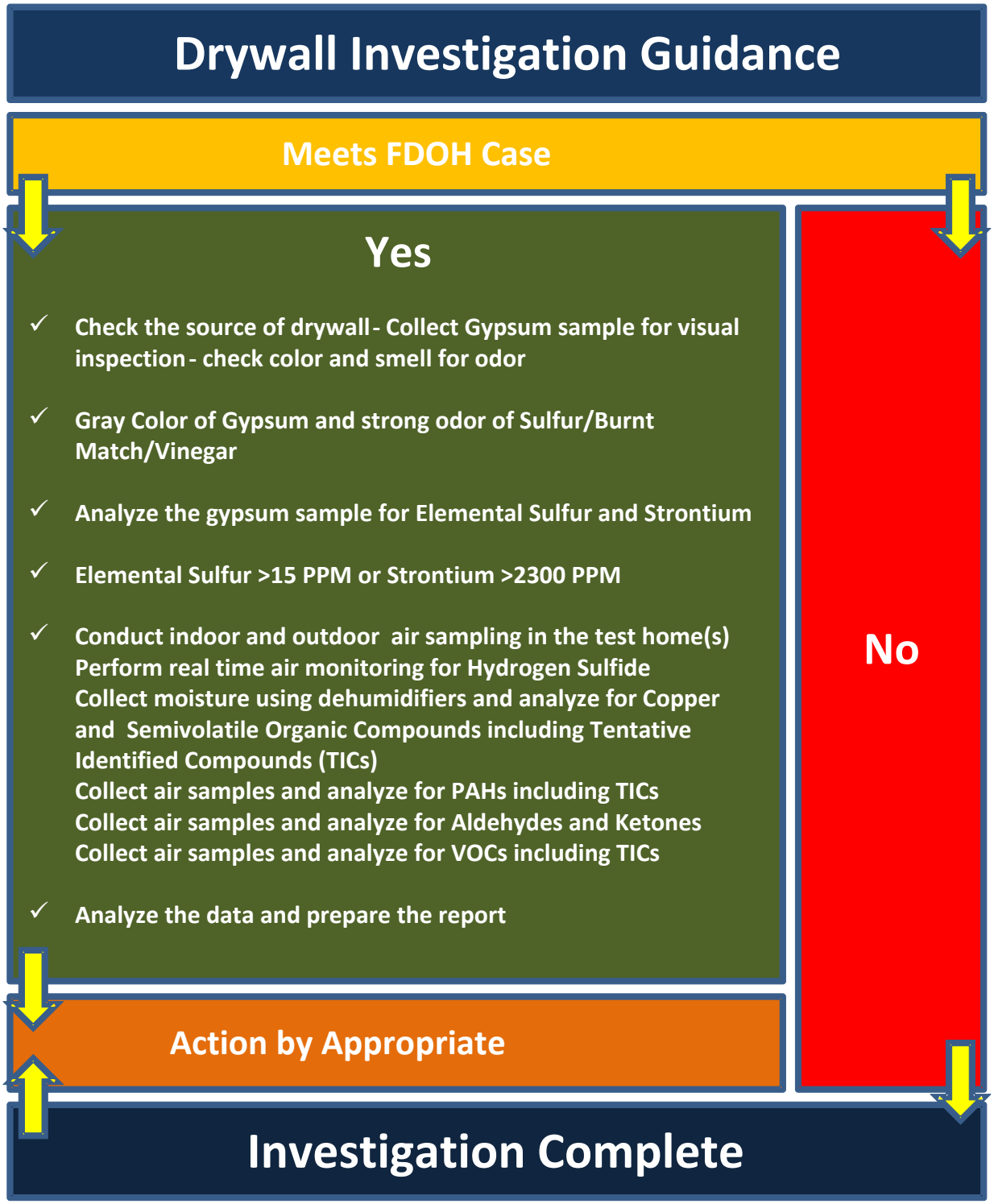
Park, J.S. and Ikeda, K, 2006. Variations of formaldehyde and VOC levels during 3 years in new and older homes, Indoor Air, 16: p. 129-135.

U.S. EPA, 2007. Microwave Assisted Digestion of Sediments, Sludges, Soils and Oils, Method 3051A. http://www.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/3051a.pdf

FIGURE-1


Drywall Investigation Guidance
Meets FDOH Case
Yes
✓ Check the source of drywall - Collect Gypsum sample for visual inspection - check color and smell for odor
✓ Gray Color of Gypsum and strong odor of Sulfur/Burnt Match/Vinegar
✓ Analyze the gypsum sample for Elemental Sulfur and Strontium
✓ Elemental Sulfur >15 PPM or Strontium >2300 PPM
✓ Conduct indoor and outdoor air sampling in the test home(s)
Perform real time air monitoring for Hydrogen Sulfide
Collect moisture using dehumidifiers and analyze for Copper and Semivolatile Organic Compounds including Tentative Identified Compounds (TICs)
Collect air samples and analyze for PAHs including TICs
Collect air samples and analyze for Aldehydes and Ketones
Collect air samples and analyze for VOCs including TICs
✓ Analyze the data and prepare the report
No
Action by Appropriate
Investigation Complete

Appendix L

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL RESPONSE TEAM
Edison, NJ – Cincinnati, OH – Las Vegas, NV – Research Triangle Park, NC

August 27, 2009

MEMORANDUM

SUBJECT: Drywall Investigations: Additional Five Drywall Sample Analysis Summary Results

FROM: Raj Singhvi, Chemist
Drywall Investigation Technical Manager
Environmental Response Team

TO: Arnold E. Layne, Director
Drywall Investigation Program Manager
Technology Innovation and Field Services Division
Office of Superfund Remediation and Technology Innovation

1.0 INTRODUCTION

A total of five drywall samples from Florida, Louisiana, and Virginia were analyzed for various parameters. The purpose of this study was to obtain additional information on the composition of the drywall and confirm the presence or absence of two organic compounds detected in the previous drywall gypsum sample study (May 7, 2009). Parameters were chosen based on: (1) residential odor complaints from the homeowners to the States; (2) available methods to obtain information about the chemical composition and the structure of the material; and (3) available field methods that may be useful in identifying whether imported drywall was used during the construction of homes.

EPA/ERT extracted three painted drywall samples from two homes in Florida and one in Louisiana during the preliminary visit to those States in preparation for conducting air testing efforts. The three drywall samples were imported from China. Samples of the paint used on the drywall were also collected from the same two homes in Florida and the home in Louisiana. In addition one imported drywall sample was collected by EPA/ERT from a warehouse in New Orleans and one drywall sample was received from a warehouse in Virginia. The results from the analysis of these drywall samples will assist EPA in preparing drywall investigation protocols for the U.S. Consumer Product Safety Commission (CPSC) and various States.

2.0 SAMPLE PREPARATION

Three painted imported drywall samples were prepared for analysis as follows: First, the thin layer of paint was scraped off of the three imported drywall samples for metals and semivolatile organic compound (SVOC) analyses. For all five drywall samples (three painted and two unpainted), the top and bottom layers of paper were then separated from the solid material (gypsum) and placed into separate glass jars. The paper portion of the drywall samples was analyzed for metals and SVOCs. The gypsum portion of drywall samples was analyzed for metals, SVOCs, volatile organic compounds (VOCs), total acid soluble sulfides, total organic carbon (TOC), sulfate, elemental sulfur, pH, and loss on ignition (LOI). The liquid paint samples were analyzed for strontium and SVOCs, including the

tentatively identified compounds of interest (i.e., propanoic acid, 2-methyl-, 2, 2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester, and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester.

3.0 ANALYTICAL RESULTS

3.1 Strontium and Elemental Sulfur

The analysis shows the presence of elemental sulfur and strontium in four out of five imported drywall samples (gypsum portions) ranging from 71.4 parts per million (ppm) to 419 ppm, and from 3,030 ppm to 4,110 ppm, respectively. No elemental sulfur was detected in the gypsum sample from the New Orleans warehouse, but strontium was detected at a concentration of 401 ppm, approximately 10 times less than that found in the other gypsum samples. Elemental sulfur was also detected in the paper portion of the four imported drywall samples ranging from 41.7 ppm to 454 ppm. The presence of elemental sulfur in the paper could be attributed to the sulfur leaching out of the gypsum, or it may have been added in some form of sulfur compound during the manufacturing process.

3.2 Organic Compounds of Primary Interest

Analytical results show the presence of two organic compounds in the three paint samples collected from the two homes in Florida and the home in Louisiana, and from the painted gypsum portion of the drywall samples. The two compounds tentatively identified by the mass spectrometry library search were propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester (CAS # 74367-33-2) at estimated concentrations ranging from 1.78 to 10.6 ppm, and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester (CAS # 74367-34-3) at estimated concentrations ranging from 2.04 to 10.7 ppm in the gypsum samples. These compounds were also detected in the paper portion of the drywall sample collected from the Louisiana home. These two compounds were detected in the liquid paint samples collected from the two homes in Florida and the home in Louisiana at a much higher concentration than that found in the gypsum portion of the drywall (see Table 1). The results of the investigation show that these two compounds are components of the paint and not necessarily from the gypsum portion of the drywall sample**.** The presence of these two compounds in the gypsum portion is attributed to diffusion from the paint to the gypsum core.

3.3 Reduced Sulfur Off-Gases from Gypsum-Headspace Analysis

The five gypsum core (without paper or paint) samples were qualitatively analyzed for sulfur compounds using a recently acquired gas chromatograph equipped with a sulfur chemiluminescence detector (GC/SCD) using a headspace technique. The experiments were performed to determine the presence of sulfur containing compounds in the drywall gypsum samples under dry and wet conditions. Due to the limited amount of sample, available paper and paint from the drywall were not included in these experiments. Five grams of each gypsum sample were sealed in 40-milliliter (mL) VOA vials for two days to simulate dry conditions; the headspace in each 40-mL vial was analyzed for sulfur gases using GC/SCD. Hydrogen sulfide, carbonyl sulfide and carbon disulfide were detected in the headspace in four drywall samples collected from the Florida and Louisiana homes, and a Virginia warehouse. Low levels of carbonyl sulfide and carbon disulfide were detected for a drywall sample collected from a warehouse in New Orleans. Next, 15-20 mL of water was added to each of the 40-mL vials to submerge each sample. These samples were placed in a room for two days to simulate wet conditions. After two days, the headspaces in these vials were analyzed. An increase in the carbonyl sulfide and carbon disulfide concentrations was noted, whereas hydrogen sulfide concentrations decreased upon the addition of water to the drywall gypsum samples. Hydrogen sulfide has a greater solubility in water than carbonyl sulfide and carbon disulfide; water solutions of hydrogen sulfide are

not stable, adsorbed oxygen causes the formation of elemental sulfur. Additional work is necessary to better characterize and understand the relationship of the headspace vapor concentrations of hydrogen sulfide, carbonyl sulfide, and carbon disulfide under dry and wet conditions.

3.4 Analytical Results Summary

The results of these experiments showed that elemental sulfur and strontium were found in the gypsum core of many of the drywall samples. Two organic compounds were attributable to the paint on the drywall. Hydrogen sulfide, carbonyl sulfide and carbon disulfide were produced from the gypsum core under dry conditions; the carbonyl sulfide and carbon disulfide concentrations increased dramatically when the gypsum core was submerged in water. Conversely, hydrogen sulfide was detected at higher concentration from dry samples of the gypsum core.

A summary of the analytical results for the five drywall samples (gypsum, paper and paint chip portions) and the liquid paint samples is presented in Table 1. The qualitative XRD and XRF results for the gypsum portion of the drywall samples are presented in Table 2. Tentatively identified compounds detected by a GC/MS library search for the SVOC and VOC fractions are presented with estimated concentrations in Tables 3 and 4 for the drywall (gypsum, paper and paint chips) samples, and the liquid paint samples. A summary of qualitative headspace reduced sulfur compound off-gases results is presented in Table 5.

4.0 RELATED WORK IN PROGRESS

ERT is now analyzing 15 drywall samples (imported and domestic) received from the U.S. CPSC on July 8 and 20, 2009. A recommended procedure for identifying imported drywall in the field will be developed based on all the drywall composition analyses that ERT has performed.

If there are any questions, please call me at 732-321-6761.

Attachments

Table 1. Target Compound Analysis Results of Imported Drywall
Table 2. XRD & XRF Analysis Results of Imported Drywall
Table 3. SVOC Tentatively Identified Compounds (mg/kg)
Table 4. VOC Tentatively Identified Compounds (mg/kg)
Table 5. Headspace Screening Results for Reduced Sulfur Compounds in Gypsum by GC/SCD (ppbv)

cc: Barnes Johnson, OSRTI
Jeff Heimerman, OSRTI/TIFSD
Dave Wright, ERT
Harry Compton, ERT

Table 1. Target Compounds Analysis Results of Imported Drywall																	
Sample Location		193 FL				233 FL				701 LA				Warehouse, VA		Warehouse, LA	
%LOI at 750C		25				23				23				25		20	
pH (5% w/v)		7.24				7.37				7.45				7.32		6.71	
Sample	Matrix	Gypsum	Paper	Paint Chips	Paint	Gypsum	Paper	Paint Chips	Paint	Gypsum	Paper	Paint Chips	Paint	Gypsum	Paper	Gypsum	Paper
Target Analytes (Units)	Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	REAC SOP 1811	737 J	5500	11900	NA	695 J	1810	4430	NA	578 J	1870	2640	NA	888 J	6000	678 J	5870
Arsenic	REAC SOP 1811	<2.33	<2.00	<1.96 J	NA	<2.50	<1.92	<2.08 J	NA	<2.33	<1.85	<2.00 J	NA	<2.42	<1.72	3.37	<1.82
Barium	REAC SOP 1811	69.6	31.1	13.3	NA	44.6	27.4	42.8	NA	39.0	30.5	27.9	NA	82.5	23.8	258	28.6
Cadmium	REAC SOP 1811	<0.233	0.215	<0.196	NA	<0.250	<0.192	<0.208	NA	<0.233	<0.185	<0.200	NA	<0.242	<0.172	<0.228	<0.182
Calcium	REAC SOP 1811	245000	13500	227000	NA	256000	15500	210000	NA	250000	21000	232000	NA	247000	10700	228000	10500
Chromium	REAC SOP 1811	1.48	4.48 J	17.2 J	NA	1.84	3.13 J	3.72 J	NA	1.74	3.06 J	5.28 J	NA	1.46	3.38 J	2.47	4.06 J
Cobalt	REAC SOP 1811	0.847	<0.400	1.61	NA	0.620	<0.385	0.597	NA	<0.467	<0.370	0.526	NA	0.904	<0.345	0.511	0.427
Copper	REAC SOP 1811	2.72	26.8	3.98	NA	2.08	21.6	1.67	NA	1.57	20.0	1.29	NA	2.44	20.9	6.16	18.8
Iron	REAC SOP 1811	2010	625	2210	NA	1620	340	1800	NA	1100	333	693	NA	1990	445	1650	486
Lead	REAC SOP 1811	1.90	5.40	2.96	NA	4.54	4.02	3.11	NA	<1.40	3.97	3.55	NA	<1.45	3.28	21.3	3.86
Magnesium	REAC SOP 1811	17400	1040	8670	NA	8740	878	5080	NA	4100	890	4180	NA	20100	830	158	1110
Manganese	REAC SOP 1811	96.7	19.5	82.5 J	NA	77.7	30.9	61.6 J	NA	57.5	30.8	51.0 J	NA	93.3	17.1	8.61	36.1
Mercury	REAC SOP 1832	0.0873	NA	NA	NA	0.0603	NA	NA	NA	<0.0486	NA	NA	NA	<0.0506	NA	1.55	NA
Nickel	REAC SOP 1811	1.50	2.06	6.52	NA	1.48	1.10	0.971	NA	1.17	1.02	1.73	NA	1.50	0.914	1.06	1.32
Potassium	REAC SOP 1811	269 J	168	421 J	NA	251 J	98.7	625 J	NA	141 J	97.9	665 J	NA	302 J	104	206 J	346
Selenium	REAC SOP 1811	<2.09	2.00	<1.76	NA	<2.25	1.95	<1.88	NA	<2.10	<1.67	<1.80	NA	<2.18	<1.55	<2.05	<1.64
Silver	REAC SOP 1811	<0.581	<0.500	<0.490	NA	<0.626	0.767	<0.521	NA	<0.584	<0.46	<0.500	NA	<0.606	<0.431	<0.570	<0.455
Sodium	REAC SOP 1811	592	2840	2150	NA	642	3670	1040	NA	414	2320	1040	NA	666	2170	316	1880
Strontium	REAC SOP 1811	3640	81.6	653	15	3030	70.5	454	26	3190	111	169	4.65 J	4110	95.0	401	24.2
Vanadium	REAC SOP 1811	2.37	2.95	8.19	NA	1.97	1.78	5.62	NA	1.62	1.57	2.38	NA	2.61	2.97	1.38	2.99
Zinc	REAC SOP 1811	3.07	37.4 J	91.2 J	NA	2.53	39.5 J	167 J	NA	0.945	30.5 J	11.6 J	NA	2.40	20.9 J	4.56	22.9 J
Total Sulfate $(SO_4)^{-2}$	EPA Method 375.4	444000	NA	NA	NA	514000	NA	NA	NA	542000	NA	NA	NA	482000	NA	563000	NA
Total acid soluble sulfide	SW 846 9030/9034	<12.6	NA	NA	NA	<12.8	NA	NA	NA	<12.9	NA	NA	NA	<12.6	NA	<12.9	NA
Elemental sulfur	Mod. REAC SOP 1805	254	223	**	NA	71.4	41.7	**	NA	419	58.3	**	NA	379	454	<7.75	<40.0
TOC	EPA C-88	6900	NA	NA	NA	4500	NA	NA	NA	4700	NA	NA	NA	6600	NA	4200	NA
Units		µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Trichlorofluoromethane	REAC SOP 1807	7.51 J	NA	NA	<25.0	5.58 J	NA	NA	<25.0	<11.9	NA	NA	<62.5	7.81 J	NA	<11.6	NA
Acetone	REAC SOP 1807	21700 J	NA	NA	11800 J	163 J	NA	NA	60.2 J	<47.6	NA	NA	45200 J	76.0 J	NA	<46.5	NA
Methylene Chloride	REAC SOP 1807	23.7	NA	NA	1890	7.69	NA	NA	4460 J	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
Carbon Disulfide	REAC SOP 1807	<11.6	NA	NA	<25.0	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	9.81 J	NA	<11.6	NA
2-Butanone	REAC SOP 1807	<11.6	NA	NA	7150	<11.8	NA	NA	<25.0	<11.9	NA	NA	367	<11.6	NA	<11.6	NA
Trichloroethene	REAC SOP 1807	<11.6	NA	NA	<25.0	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	8.65 J	NA	<11.6	NA
Bromodichloromethane	REAC SOP 1807	<11.6	NA	NA	<25.0	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
4-Methyl-2-Pentanone	REAC SOP 1807	<11.6	NA	NA	149	<11.8	NA	NA	19.9 J	<11.9	NA	NA	36.5 J	<11.6	NA	<11.6	NA
Toluene	REAC SOP 1807	<11.6	NA	NA	91.6	<11.8	NA	NA	13.1 J	<11.9	NA	NA	58.0 J	68.2	NA	<11.6	NA
Ethylbenzene	REAC SOP 1807	11.0 J	NA	NA	53.8	6.66 J	NA	NA	<25.0	<11.9	NA	NA	<62.5	3.14 J	NA	<11.6	NA
p&m-Xylene	REAC SOP 1807	47.5	NA	NA	91.8	33.9	NA	NA	8.20 J	<23.8	NA	NA	<125	9.79 J	NA	<23.3	NA
o-Xylene	REAC SOP 1807	13.9	NA	NA	34.4	6.47 J	NA	NA	<25.0	<11.9	NA	NA	<62.5	4.16 J	NA	<11.6	NA
Styrene	REAC SOP 1807	<11.6	NA	NA	226	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	3.95 J	NA	<11.6	NA
Isopropylbenzene	REAC SOP 1807	<11.6	NA	NA	68.4	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
1,2,3-Trichloropropane	REAC SOP 1807	<11.6	NA	NA	<25.0	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
n-Propylbenzene	REAC SOP 1807	5.95 J	NA	NA	47.7	3.34 J	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
1,3,5-Trimethylbenzene	REAC SOP 1807	8.51 J	NA	NA	<25.0	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
1,2,4-Trimethylbenzene	REAC SOP 1807	35.8	NA	NA	15.6 J	15.6	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
sec-Butylbenzene	REAC SOP 1807	<11.6	NA	NA	9.8	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	<11.6	NA	<11.6	NA
1,4-Dichlorobenzene	REAC SOP 1807	<11.6	NA	NA	<25.0	<11.8	NA	NA	<25.0	<11.9	NA	NA	<62.5	3.88 J	NA	<11.6	NA
Diethylphthalate	REAC SOP 1805	247 J	<2000	<10000	NA	128 J	<2000	<10000	NA	338 J	<2000	<20000	NA	<388	<2000	<388	<2000
Di-n-butylphthalate	REAC SOP 1805	379 J	2210	4070 J	NA	874	3470	5940 J	NA	1790	6010	9320	NA	125 J	1670 J	122 J	1310 J
3,3'-Dichlorobenzidine	REAC SOP 1805	<388	<2000	<10000	NA	<392	<2000	<10000	NA	<397	<2000	<20000	NA	<388	890 J	<388	<2000
Bis-(2-ethylhexyl) phthalate	REAC SOP 1805	499	3710	4370 J	NA	429	2040	6730 J	NA	769	1270	10300	NA	358 J	1930	223 J	1780 J
TIC'S of interest from Previous Analysis Report		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Propanoic acid ester $	REAC SOP 1805	1.78	ND	ND	1860	3.98	ND	ND	3020	10.6	4.77	ND	3600	ND	ND	ND	ND
Propanoic acid ester $$	REAC SOP 1805	2.04	ND	ND	2680	4.24	ND	ND	4190	10.7	9.33	ND	5600	ND	ND	ND	ND

NA: Not Analyzed or Not reported due to sample size

$: Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester

$$:Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester

ND: Not detected

J: Concentration estimated

**Elemental sulfur detection level is higher in case of paint chip due to insufficient sample

All drywall samples analyzed are imported.

Raj 8/10/2009

Table 2. XRD & XRF Analysis Results of Imported Drywall (Gypsum)					
XRD Quantitative Phase Analysis (Wt %)					
Sample Location	193 FL	233 FL	701 LA	Warehouse, VA	Warehouse, LA
$Ca(SO_4)(H2O)_2$ (Gypsum)	77.5 (6)	80.7(6)	81.6(6)	77.2(7)	89.4(6)
CaCO3 (Calcite)	5.2(1)	6.2(1)	7.4(1)	4.7(1)	0.2(1)
$CaMg(CO_{3)}$ (Dolomite)	12.5(2)	6.1(1)	3.7(2)	11.9(2)	0.6(1)
SiO_2 (Quartz)	1.1(1)	0.9(1)	1.2(1)	0.7(1)	2.9(1)
$CaSO_4$ (Anhydrite)	0.3(1)	2.0(1)	1.5(1)	1.6(1)	2.2(1)
$Ca(SO_4)(H2O)_{0.5}$ (Bassanite)	2.5(1)	2.9(1)	2.9(1)	2.0(1)	3.0(1)
$K(Al.Fe)(Al,Si_3O_{10})(OH)_2$ (Muscovite)	0.9(1)	1.2(2)	1.7(1)	1.9(1)	1.7(1)

Note: The number in parentheses is the estimated standard deviation. For example, 77.5(6) represents 77.5 ± 0.6%.

Note: Samples were analyzed by sub-contract laboratory

XRF Analysis (mg/kg)					
Sample Location	193 FL	233 FL	701 LA	Warehouse, VA	Warehouse, LA
Strontium (Sr)	3200	2500	2750	3600	340
Calcium (Ca)	240000	240000	245000	240000	220000
Iron (Fe)	1400	1200	785	1500	935

Table 3. SVOC Tentatively Identified Compounds (mg/kg)																	
	Sample Location	**193 FL**				**233 FL**				**701 LA**				**Warehouse , VA**		**Warehouse, LA**	
	Matrix	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Gypsum**	**Paper**
RT	**Tentatively Identified Compounds**																
3.2	Ethylene Glycol		3.72										1700				
3.4	Unknown				630				762								
3.5	C5 Organic Acid							0.400									
3.9	Propylene glycol	0.497			3680				139								
4.1	2-Methyl-propanoic Acid				144				140								
4.6	Unknown				130												
5.1	C6 Organic Acid/ester			0.660													
5.2	Unknown disulfide compound													0.598			
5.2	Unknown	0.503	2.51														
5.3	2-Furancarboxaldehyde															0.0486	
5.6	Unknown													0.448			
5.8	Diethylene glycol												5710				
6.2	Styrene			2.02													
6.8	Unknown disulfide compound													0.601			
6.8	Diethyl Disulfide	0.517															
7.2	Diethylene Glycol	0.377			592	2.12	31.3			1.18	7.55						
7.2	C4 Alcohol		4.03														
7.3	C7 Aldehyde/Unknown			0.951													
7.4	C6 Organic Acid\Unknown					0.559				0.638							
7.4	C6 Organic Acid	0.807														0.0807	0.763
7.6	Aniline						0.648				1.82				2.69		1.12
7.7	Alkyl-benzene isomer C9H12																
7.7	Ethanol, 2-(2-butoxyethoxy)-												3490				
7.8	Ethanol, 2-(ethoxyethoxy)									0.989	1.49						
8.1	Ethyl hexanol isomer				62.4			1.16	106								
8.2	Unknown disulfide compound	0.271		0.813										0.367			
8.4	Tripropylene glycol monomethyl ether (C10H22O4 isomer)												306				
8.2	Unknown									0.508							
8.4	C5 Organic Acid															0.0793	
8.6	2-Furancarboxylic acid															0.306	3.05
8.4	1-Propanol, 2,2'-oxybis-					0.400											
8.7	C8 Alcohol																1.15
8.7	C7 Organic Acid									0.323							
8.7	Unknown	0.252						0.670						0.236		0.0850	
8.8	Acetophenone			0.919													
8.8	Acetophenone+unknown		1.27														
8.9	o-Toluidine						0.486								0.876		
8.9	2,5-Furancarboxylic acid															0.0416	
9.2	C9 Aldehyde		1.64														
9.6	Unknown disulfide compound													0.343			
9.6	C8 Organic Acid/ester			1.15													
9.6	Unknown	0.192						1.13									
9.8	Trimethyl Pentanediol				1340				961								
10.0	C8 Organic Acid/ester					0.543				1.25							
10.0	2-Decyne-4,7-diol, 2,4,7,9-tetramethyl					0.509											
10.0	Phthalic anhydride/Unknown			0.547													
10.3	2-Dodecene, (Z)-											4.19				0.0267	
10.4	Ethanol, 1-(2-butoxyethoxy)-	2.36	2.07			0.281				0.508	7.43		148				
10.7	Hydroxy Methyl Furan Carboxaldehyde																2.22
10.9	Unknown													0.213			
11.0	Benzothiazole\Unknown						0.453										
11.0	2-(2-butoxyisopropoxy)-2-isopropanol isomer					1.83											
11.0	Dipropylene glycol, monomethylether isomer					1.90											
11.3	C10 Alcohol																0.880
11.1	Caprolactum + unknown					2.15											
11.1	Unknown						0.377										
11.1	1-Phenoxy-2-propanol		5.81		1170												
11.2	C9 Organic Acid						0.624			2.04	2.98						
11.2	Quinoline	0.296															
11.3	1,4- Dimethylcyclooctane													0.205			
11.3	Propanediol ethyl isomer				82.8												
11.3	Caprolactum	0.267					0.589										

Table 3. SVOC Tentatively Identified Compounds (mg/kg)																	
	Sample Location	**193 FL**				**233 FL**				**701 LA**				**Warehouse , VA**		**Warehouse, LA**	
	Matrix	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Gypsum**	**Paper**
RT	**Tentatively Identified Compounds**																
12.1	1-Decanethiol	0.103												0.217			
12.4	4-Hydroxybenzaldehyde						0.355								0.782		
12.5	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	1.78			1860	3.98	0.982		3020	10.6	4.77		3600				
12.8	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	2.04			2680	4.24			4190	10.7	9.33		5600				
12.8	Unknown							0.380						0.448			
13.0	Unknown			1.05		0.509		0.530									
13.0	Vanillin	0.286	2.78				0.835			0.444	2.37				6.04	0.117	3.49
13.3	1,4-Methanoazulene, decahydro-4,8,8-trimethyl-9-methylene-														0.847		
13.6	Unknown																7.67
13.6	Dodecanol				42.0						2.04			2.38	4.51		
13.7	C12 Alcohol																
13.6	C12 Chlorinated Alkane											3.20				0.394	
13.7	Dodecenol	2.81	9.88														
13.8	Unknown (column bleed?)				91.6				55.6								
14.0	2,6-Di(t-butyl)-4-hydroxy-4-methyl-2,5-cyclohexadiene-1-one									0.242							
14.4	1-Dodecanethiol	0.896	1.07											2.42	4.16		
14.9	Unknown			0.680				0.350				0.962					
14.9	Unknown Organic Acid								57.2								
14.9	C12 Organic Acid ester/phthalate			0.758	37.6												
15.0	Hydroxy methoxy phenyl ketone														0.740		
15.1	Unknown							0.790									
15.1	Phenol, 4-octyl			1.15													
15.4	Cedran-8-ol									0.713							
15.4	Unknown			0.702													2.74
16.0	Unknown							0.420			2.02						
16.2	C10 Organic Acid										2.34						
16.3	Unknown											1.37					
16.3	Unknown			0.729				0.570		1.33	3.44				0.981		
16.4	2-Tetradecene/Cyclotetradecane	0.304															
16.4	C14 Organic Acid/Benzoic acid, propy; ester isomer									0.736							0.785
16.4	C14 Organic Acid/Unknown		1.75				0.428										
16.4	Tetradecanethiol													1.04	2.87		
16.8	Alkane/Unknown															0.0346	
16.7	Bis Phenyl ether							0.390				0.949					
16.8	Benzenesulfonamide, n-butyl-							0.980									
16.9	C20 Alkane													0.186			
16.7	Benzyl Benzoate			0.617													
16.9	Fyrol PCF							0.390									
17.1	Unknown			1.06				0.380				1.62					
17.1	Unknown			2.20													
17.1	Unknown							0.590									
17.4	C16 Organic Acid ester/phthalate			1.80				2.23		0.579							
17.6	1,2-Benzenedicarboxylic acid, butyl decyl ether	0.196				0.557	0.439									0.0336	
17.8	Unknown							0.430									1.36
18.2	C16 Organic Acid	0.738	14.6	0.855		0.788	3.90	0.510		1.36	12.6			0.770	13.6	1.57	16.0
18.8	Unknown														1.31		
18.9	Dibutylisophthalate							0.510									
19.1	Unknown				190							0.931					
19.4	Unknown			4.40				1.66				1.10		0.361			
19.3	Unknown Alkane						0.601			1.20						0.0345	
19.6	Octadecenoic Acid		1.78				4.38				9.67				17.5	0.248	9.88
19.6	Unknown			0.987													
19.7	Alkyl maleate			5.17													9.20
19.8	Benzoic Acid alkylester		9.72			0.249				1.14	2.14	16.2			9.10	0.199	
19.9	Bis (2-ethylhexyl) maleate							16.0									
19.9	Unknown			0.767													
20.1	Unknown			1.21													
20.1	Unknown			0.607				0.350									
20.1	Fumaric Acid C6 ester								375								
20.0	Unknown Alkane									0.712						0.0923	

Table 3. SVOC Tentatively Identified Compounds (mg/kg)

	Sample Location	193 FL				233 FL				701 LA				Warehouse , VA		Warehouse, LA	
	Matrix	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Paint Chips**	**Paint**	**Gypsum**	**Paper**	**Gypsum**	**Paper**
RT	**Tentatively Identified Compounds**																
20.1	C22 Alkane					0.319	1.27				2.29				0.954		0.840
20.8	Unknown Alkane															0.233	
20.7	C23 Alkane																2.16
20.8	C21 Alkane	0.315															
20.5	Unknown														1.09		
20.6	Fumaric Acid, bis (2-ethylhexyl) ester							183									
20.6	Unknown Alkane					0.247					5.31						
20.8	Unknown Alkane		2.03			0.935	2.71			1.47				0.534	2.45		
21.0	Unknown														0.766		
21.0	Unknown Alkane					0.242											
21.3	Unknown							0.410									
21.3	Benzyl butyl phthalate			0.573				1.11				2.27					
21.5	Unknown Alkane	0.383	3.59			1.48	4.25			2.33	8.96			0.808	5.55	0.396	5.18
21.8	Phosphoric Acid, 2-ethylhexyldiphenyl ester			1.14								3.62					
21.8	C20 Alkane							0.430									
21.9	Unknown					0.253											
22.2	Unknown Alkane	0.579				1.98								1.05		0.560	7.61
22.1	4-Phenyl Morpholine						9.18	1.75				631					
22.2	4-Phenyl Morpholine											840					
22.1	Unknown		6.80					20.4		17.4	59.0				8.15		
22.2	Unknown			12.4		0.360				16.8	98.7					0.123	
22.4	Unknown Alkane					0.290											
22.3	Diethylene glycol dibenzoate		6.45				19.9	63.2		2.59	9.71				7.75		4.55
22.3	Dipropylene glycol dibenzoate											121					
22.7	Unknown			1.56						2.88							
22.8	Unknown Alkane	0.455	4.69			1.74	6.51				15.8			0.971	6.61	0.606	5.82
23.2	Unknown Alkane					0.287											
23.2	Unknown			2.36													
23.4	Unknown Alkane	0.636	6.39			1.95	8.41			3.12	21.8			1.19	7.88	0.578	7.01
23.8	Unknown													0.293		0.0643	
24.0	Unknown Alkane	0.387	7.08			1.09	4.06			1.28	5.49			0.685	3.81	0.415	4.11
24.7	Unknown Alkane	0.580	4.63			1.06	4.86			1.15	6.37			0.878	5.18	0.359	4.44
25.1	Disulfide, didodecyl													0.637			
25.2	Unknown	0.230						2.64									
26.2	Unknown Alkane	0.403	5.65			0.592	5.58			0.456	6.10			0.583	5.75	0.147	4.23
26.9	C28 Alkane										5.03						
26.8	Unknown													0.408			
27.1	Unknown Alkane		4.26			0.221	4.74			0.238					4.18	0.0853	
27.2	Binaphthylsulfone isomer	0.377												0.273		0.225	
28.0	Unknown Alkane																2.78
28.0	Unknown															0.211	
28.1	Binapthyl sulfone	0.169															
28.1	Unknown Alkane		4.20				4.23				4.06				3.74		
29.4	Unknown Alkane		3.26				3.20				3.01				2.45		1.86
29.9	Unknown Alkane																3.39
30.8	Unknown Organic Acid/ester		1.02														2.25
32.3	Unknown Alkane						1.70				1.81						
32.8	C28 Alkane		1.99														
33.5	Unknown		3.58														2.43
	Total TIC Concentration mg/Kg	**19.9**	**128**	**49.8**	**12700**	**32.9**	**127**	**304**	**9810**	**86.4**	**325**	**1630**	**20900**	**19.1**	**132**	**7.39**	**119**
	Total SVOC mg/Kg	**1.84**	**5.92**	**8.44**	**NA**	**1.43**	**5.51**	**12.7**	**NA**	**2.90**	**7.28**	**19.6**	**NA**	**0.483**	**4.49**	**0.345**	**3.09**
	Total mg/Kg	**22**	**134**	**58**	**12700**	**34**	**133**	**317**	**9810**	**89**	**332**	**1650**	**20900**	**20**	**136**	**8**	**122**

Table 4. VOC Tentatively Identified Compounds (mg/kg)									
	Sample Location	**193 FL**		**233 FL**		**701 LA**		**Warehouse, VA**	**Warehouse, LA**
	Matrix	**Gypsum**	**Paint**	**Gypsum**	**Paint**	**Gypsum**	**Paint**	**Gypsum**	**Gypsum**
RT	**Tentatively Identified Compounds**								
	Isopropanol						4.04		
4.8	2-Propanol, 2-methyl-		1.02		1.46		4.61		
7.2	Propanal, 2,2-dimethyl-		0.088						
10.4	Pentanal+TCE			0.00357		0.00357			
12.6	2-Pentanone,4,4-dimethyl		0.00831						
12.8	C7 Ketone (2,4,dimethyl,3-pentanone)		0.00726				0.00699		
13.2	Hexanal			0.00464		0.00464		0.00713	0.00186
13.3	Acetic acid, butyl ester						0.0407		
14	C7 Ketone (4-heptanone)		0.00285				0.00879		
14.3	Benzene, 1-chloro-4-(trifluoromethyl)-		0.0314						
14.6	n-Butyl ether		0.25		0.25		0.625		
14.8	4-Heptanone				0.0164		0.0272		
15.5	Propanoic acid, butyl ester		0.00718				0.249		
15.6	Heptanal			0.00419		0.00419		0.00168	
17.1	Ethyl Methyl Benzene Isomer	0.0437		0.0404		0.0404			
17.3	Butanoic acid butyl ester isomer						0.0118		
17.6	Ethyl Methyl Benzene Isomer			0.00244		0.00244		0.00203	
17.7	Benzaldehyde		0.00582				0.0183		
17.7	Unknown							0.00459	0.00179
17.8	Ethyl Methyl Benzene Isomer								
17.8	Octanal			0.00425		0.00425			
17.9	Butanoic acid butyl ester isomer						0.0067		
18.1	Unknown aldehyde			0.00245		0.00245			
18.1	1-Hexanol, 2-ethyl-		0.149		1.14			0.00488	
18.2	C10 Alkene\Cycloalkane						0.00909		
18.4	Limonene							0.00251	
18.6	2-Butenoic acid, butyl ester						0.0334		
19	C8 alcohol							0.0065	0.0043
20.1	Unknown			0.00547		0.00547		0.00973	0.00349
20.8	Unknown aldehyde							0.00219	
23.3	Unknown								0.00191
23.4	Unknown							0.00221	
24.5	Unknown			0.00134		0.00134			
25.5	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester		0.0469		0.216		0.0937		0.00793
25.7	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester		0.0266		0.125		0.0854		0.00735
26.9	Unknown								0.0
	Total VOC Concentration (mg/Kg)	**21.9**	**21.6**	**0.242**	**4.56**	**0.242**	**45.7**	**0.195**	**0**
	Total VOC TIC Concentration (mg/Kg)	**0.0437**	**1.64**	**0.0688**	**3.21**	**0.0688**	**9.87**	**0.0435**	**0.0286**
	Total mg/Kg	**21.9**	**23.3**	**0.311**	**7.77**	**0.311**	**55.5**	**0.238**	**0.0286**

Table 5. Headspace Screening Results for Reduced Sulfur Compounds in Gypsum by GC/SCD (PPBV)												
Sample Location	Method Blank		193 FL		233 FL		701 LA		Warehouse, VA		Warehouse, LA	
Target Analytes	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
Hydrogen SUlfide	<2.0	<2.0	130	76	72	4.3	45	6.9	130	35	<2.0	2.8
Carbonyl Sulfide	<2.0	<2.0	270	640E	130	700E	160	1100 E	270	2100 E	9.5	29
Methyl Mercaptan	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Ethyl Mercaptan	<2.0	<2.0	<2.0	7.0	<2.0	3.8	<2.0	<2.0	7.1	7.1	<2.0	<2.0
Dimethyl Sulfide	<2.0	<2.0	<2.0	<2.0	<2.0	3.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Carbon Disulfide	<2.0	<2.0	72	400E	50	420E	63	570E	81	1100E	8.2	24
Isopropyl Mercaptan	<2.0	<2.0	8.9	44	7.8	15	<2.0	18	7.7	36	<2.0	3.1
t-Butyl Mercaptan	<2.0	<2.0	<2.0	4.3	<2.0	<2.0	<2.0	<2.0	<2.0	6.7	<2.0	<2.0
n-Propyl Mercaptan	<2.0	<2.0	<2.0	3.7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Ethyl Methyl Sulfide	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Thiophene/2-Methyl-Propanethiol	<4.0	<4.0	<4.0	25	<4.0	7.4	<4.0	7.2	11	17	<4.0	<4.0
Methyl Isopropyl Sulfide	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1-Methyl-Propanethiol	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butyl Mercaptan	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

E: estimated, above calibration range

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL RESPONSE TEAM
Edison, New Jersey 08837

May 7, 2009

Ms. Lynn Wilder
Environmental Health Scientist
Agency for Toxic Substances and Disease Registry
Department of Homeland Security
4770 Buford Highway, NE
Mailstop F-57
Atlanta, GA 30341-3717

Subject: Drywall Sample Analysis

Dear Ms. Wilder,

The Agency for Toxic Substances and Disease Registry (ATSDR) contacted the Environmental Response Team (ERT) of the USEPA Office of Superfund Remediation and Technology Innovation (OSRTI) for analytical assistance with the Chinese-manufactured drywall used in Florida. On March 5, 2009, a teleconference was held with ERT, ATSDR and the Florida Department of Health (FDOH). The FDOH provided background information, including the work that had been previously performed by contractors from Lennar and Knauf (a German company that manufactures drywall in China). ATSDR requested that ERT conduct an independent elemental analysis of the Chinese drywall and compare it with the drywall manufactured in the U.S. With ATSDR's concurrence, six wallboard samples were selected for analysis. Two drywall samples known to have been manufactured in China were extracted by FDOH from affected homes in Florida. Four samples of U.S.-manufactured drywall were purchased from local stores in Edison, New Jersey.

Drywall Sample Analysis

ATSDR requested that the ERT analytical laboratory provide support to analyze drywall samples from China suspected of emitting rotten egg odors and causing copper corrosion (e.g., power switches, appliances) throughout the houses with complaints. The corrosion of copper containing items may lead to releases of chlorofluorocarbons (CFCs) and natural gases, depending on their construction materials. Individuals complaining about the drywall in their homes have also reported health issues such as problems with asthma, respiratory irritation, breathing difficulties, coughing, insomnia, eye irritation and headaches. At this time, FDOH has been unable to determine if these issues are directly linked to the suspect drywall. To date, a relatively low number of

samples have been analyzed, and the emission levels detected from samples tested in the laboratory are far lower than those typically associated with such symptoms.

Two Chinese painted drywall samples extracted from Florida homes by FDOH were shipped to Edison for analysis by USEPA/ERT. ERT purchased four US-manufactured drywall samples from local stores for comparison. First, the thin layer of paint was scraped off of two Chinese drywall samples for metals analysis. The top and bottom layers of paper were separated from the solid (gypsum) material of all six drywall samples and placed into separate glass jars. The paper portions of the samples were analyzed for metals, semi volatile organic compounds (SVOCs) and formaldehyde. The gypsum samples were analyzed for metals, SVOCs, volatile organic compounds (VOCs), formaldehyde, sulfide, water soluble chlorides, total organic carbon (TOC), pH and loss on ignition (LOI). Also, an optical microscopic examination was conducted to determine the presence of fly ash.

The drywall sample manufacturers and product names are as follows: US Gypsum/Hamilton (US); PROROC/Certainteed (US); National Gypsum/Gold Bond (US); GP/Tough Rock (US); Knauf/33928-20055 (China); and MIC/33966-12077 (China). The ERT/REAC analytical methods were modified to analyze these samples, as standard methods were not available in the area of sample digestion/preparation procedures.

Analytical Methods

Semi Volatile Organic Compounds: The gypsum and paper portions of the drywall samples were analyzed using ERT/REAC SOP #1805. A specific weight of sample in grams is extracted with a 1:1 methylene chloride/acetone mix in a Soxtherm extractor. The extract is concentrated, spiked with an internal standard mixture and subsequently analyzed by gas chromatography/mass spectrometry (GC/MS). Target analytes are identified by comparing the measured mass spectra and retention times with those obtained from calibration standards acquired under the same operating conditions used for the samples. Quantitation of each identified target analyte is calculated based on the internal standard method. The method was modified to determine the presence of any non-target compounds via a library search for the purpose of tentative identification. The NIST/EPA/NIH Mass Spectral Library containing more than 100,000 spectra was used. The elemental sulfur was analyzed using the sample extracts by GC/MS using an ERT/REAC modified method.

Volatile Organic Compounds: The two Chinese and one US-manufactured drywall gypsum samples were analyzed using ERT/REAC SOP #1807. A known amount of gypsum is weighed into a 40-milliliter (mL) Teflon®-lined septum vial, 5 mL of commercially available water suitable for VOC analysis is added, and the sealed vial is placed in the auto sampler. An additional 5-mL portion of VOC-free water containing surrogate/internal standards is added by the autosampler. In order to purge the compounds out of the dry wall, the samples were heated for five minutes at 75°C. These samples were then purged with helium for 20 minutes at the same temperature,

desorbed (trapped) onto the trap for four minutes and injected into the GC and detected using a 5975 MSD. The method was modified to determine the presence of any non-target compounds via a library search for the purpose of tentative identification. The NIST/EPA/NIH Mass Spectral Library containing more than 100,000 spectra was used.

Metals: The gypsum samples were first screened using a NITON x-ray fluorescence detector (XRF) to determine the presence of any metals. The XRF will help to ascertain whether additional metals that are not included in the Target Analyte List (TAL) routinely analyzed by the laboratory need to be added. The gypsum, paper and paint samples were analyzed for TAL metals using ERT/REAC SOP #1811, *Determination of Metals by Inductively Coupled Plasma (ICP) Methods,* and SOP #1832, *Determination of Mercury by Cold Vapor Atomic Absorption (CVAA)*. Based on the XRF screening, strontium and sulfur were added to the list of analytes.

Formaldehyde, Sulfide, Total Organic Carbon: Analyses for these compounds were contracted to outside laboratories. Formaldehyde was analyzed by high pressure liquid chromatography (HPLC), ultraviolet detection (UV) in accordance with modified NIOSH Method 2016. For acid soluble sulfides, the gypsum samples were distilled using EPA SW-846 Method 9030B, which separates the sulfides from the matrix by adding sulfuric acid to the sample and heating to 70°C. The sulfide was quantified using an iodometric method. TOC was determined using a carbonaceous analyzer in accordance with EPA Region II SOP #C-88.

Water Soluble Chlorides: A specific weight of sample was mixed with a known volume of water prior to analysis. Samples were analyzed using a five-point calibration curve by a modified ferricyanide spectrophotometric technique, as outlined in the Standard Methods for the Examination of Water and Wastewater, Method 4500-Cl-E.

Loss on Ignition and pH: Loss on ignition data were obtained by weighing a known amount of sample into a crucible and igniting at 750°C using the modified Standard Methods for the Examination of Water and Wastewater, Method 2540G. A 5 percent weight by volume of a gypsum sample in water was prepared and mixed using a magnetic stirrer. The pH of the resulting aqueous solution was measured electrometrically using a calibrated pH meter.

Alkalinity and Sulfate: Alkalinity was performed in accordance with the Standard Methods for the Examination of Water and Wastewater, Method 2320B, that uses an acid titrant to measure the buffering capacity or ability to react with acids to a specific pH. Sulfates were determined using EPA Region II SOP #C-19.

Optical Microscopic Examination: The optical microscopic examination was performed at the ERT-Las Vegas laboratory using an Olympus optical microscope.

Discussion of the Results:

The significant differences between the Chinese drywall and the US-manufactured drywall analysis are as follows:

ERT analysis shows the presence of sulfur at 83 ppm and 119 ppm in the Chinese drywall samples and sulfur not detected in four US-manufactured drywall samples. The metal analysis shows the presence of strontium at 2,570 ppm and 2,670 ppm in the Chinese drywall samples, whereas strontium was detected in the US-manufactured drywall at 244 ppm to 1,130 ppm. The total acid soluble sulfides were not detected in any of the drywalls. Further investigation is critical to determine the presence of strontium as strontium sulfate or strontium sulfide using x-ray diffraction.

Iron concentrations of 1,390 ppm and 1,630 ppm were detected in the Chinese drywall samples and in the range of 841 ppm to 3,210 ppm for the US drywall samples. The highest concentration of iron detected in the National Gypsum/Gold Bond drywall was twice as high as the amount found in the Chinese drywall. An investigation will be done using additional drywall samples to determine whether the iron is present as oxide, sulfide or sulfate.

No evidence of fly ash in the Chinese drywall samples was noted based on the optical microscopic examination.

The ERT/REAC SVOC analysis results show the presence of two organic compounds in the Chinese drywall, as tentatively identified by the mass spectrometry library search for the Chinese drywall. The FDOH has requested that ERT further investigate these compounds. The two compounds were propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester (CAS # 74367-33-2) at estimated concentrations of 58 and 92 ppm, and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester (CAS # 74367-34-3) at estimated concentrations of 50 and 84 ppm. These compounds were not detected in the US-manufactured drywall. ERT analyzed two samples for VOCs by GC/MS. The analyses confirm the presence of the above two compounds in the Chinese drywall, as tentatively identified by the mass spectrometry library search. ERT is in the process of obtaining standards of propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl) propyl ester (CAS # 74367-33-2) and propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester (CAS # 74367-34-3) to confirm the findings. The literature search reveals that these compounds are found in acrylic paints as reported in the following website:

http://www2.mst.dk/common/Udgivramme/Frame.asp?http://www2.mst.dk/udgiv/publications/2008/978-87-7052-763-7/html/kap02_eng.htm

The summary of analytical results of the six drywall (gypsum, paper, and paint) samples is presented in Summary Table 1. The semi-quantitative XRF data for gypsum

analysis are presented in Table 2. The tentatively identified compounds detected by the GC/MS library search for the SVOC analysis are presented in Table 3 for the gypsum and paper portions of the drywall samples.

Work in Progress

The additional drywall samples to be received from CPSC will be analyzed semi-quantitatively for calcium sulfate, strontium sulfide, strontium sulfate, pyrites and iron oxide by x-ray diffraction. The drywall samples from the United States and China will also be analyzed for VOCs, SVOCs, metals including strontium, sulfide, sulfite, formaldehyde, TOC and LOI. An optical microscopic examination for fly ash will also be conducted. Based on these analyses and the chamber study, ERT will conduct indoor air monitoring in Florida and Louisiana in three test houses for predetermined parameters. A QAPP is under preparation for the Technical Workgroup to review based on the available information to date, and will be modified based on any new information.

If there are any questions, please call me at 732-321-6761.

Sincerely

Raj Singhvi, Chemist

Enclosures

cc: David Krause, FDOH
Barnes Johnson, OSRTI
Arnold Layne, OSRTI/TIFSD
Jeff Heimerman, OSRTI/TIFSD
Dave Wright, ERT
Harry Compton, ERT

Table-1 Results of the Analysis for Metals in Solid Drywall Material, Paper and Paint

Sample No.		1	2	3	4	5	6
Sample ID		US Gypsum/Hamilto	Knauf/33928-20055	MIC/33956-12077	PROROC/Certainteed	ational Gypsum/Gold Bon	GP/Tough Rock
	Method	US	China	China	US	US	US
%LOI at 750C		21	22	24	21	19	24
pH of 5% slurry		7.08	7.41	7.35	7.28	7.29	7.31
Analyte		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	Modified REAC SOP 1811	305	1180	946	357	3570	1140
Barium	Modified REAC SOP 1811	5.14	33.3	42.8	14.2	12.8	15.0
Calcium	Modified REAC SOP 1811	278000	268000	254000	267000	245000	246000
Chromium	Modified REAC SOP 1811	1.92	5.28	3.66	2.81	4.34	1.96
Cobalt	Modified REAC SOP 1811	<0.87	<0.87	<0.93	<0.99	2.89	<0.90
Copper	Modified REAC SOP 1811	<1.52	1.79	2.80	<1.71	6.15	2.07
Iron	Modified REAC SOP 1811	841	1390	1630	1170	3210	1850
Lead	Modified REAC SOP 1811	<2.17	<2.16	<2.33	<2.44	3.48	2.61
Magnesium	Modified REAC SOP 1811	463	5020	10300	934	5250	4980
Manganese	Modified REAC SOP 1811	3.24	48.8	71.3	16.1	69.1	72.4
Mercury	Modified REAC SOP 1832	2.08	0.562	0.190	0.0668	<0.047	<0.045
Nickel	Modified REAC SOP 1811	<1.30	1.68	1.44	1.62	5.41	2.09
Potassium	Modified REAC SOP 1811	106	368	333	135	685	1490
Selenium	Modified REAC SOP 1811	8.94	2.81	<3.03	3.43	<2.87	<2.92
Sodium	Modified REAC SOP 1811	<217	428	498	<244	<220	<225
Vanadium	Modified REAC SOP 1811	<0.87	2.52	2.28	2.77	3.36	2.34
Zinc	Modified REAC SOP 1811	<6.71	<6.71	<7.24	<7.56	<6.83	10.1
Strontium (Drywall/Paper)	Modified REAC SOP 1811	244/45	2570/570	2670/636	499/110	638/19	1130/155
Strontium (Paint)	Modified REAC SOP 1811	NA	290	122	NA	NA	NA
Alkalinity (CaCO3)	SM2320B	<99	<99	970	<99	840	230
Alkalinity - Bicarbonate	SM2320B	<99	<99	970	<99	840	230
Sulfide (Lab1)	9030B	<4	<4	<4	<4	<4	12
Sulfide (Lab 2)	9030B	<10	<10	<10	<10	<10	<10
Sulfate	Region II SOP#C-19	666000	535000	507000	652000	568000	567000
Chloride (water soluble)	Modified SM 4500-Cl- E	74	250	190	36	59	143
Sulfur*	Modified REAC SOP 1805	<8.23	119	83	<8.13	<7.94	<7.94
Formaldehyde (Drywall/Paper)	Modified NIOSH 2106	ND/0.58	ND/0.44	ND/ND	ND/0.83	0.54/ND	0.24/0.67
Total Organic Carbon	Region II SOP#C-88	4300	2900	4300	2200	5500	16000
TOTAL ORGANIC COMPOUND* (Drywall/Paper)	REAC SOP 1805	7.7/75	145/125	243/246	18.3/299	31.6/70	2350/2400

* GC/MS analysis results from BNA extract including TIC'S

Raj April, 28, 2009

Table 2 Qualitative Analysis of Drywall Gypsum- XRF

Sample #	Sample ID		Ca	Fe	Sr
1	US Gypsum/Hamilton	US	222000 +/- 1200	410 +/- 90	180 +/- 10
2	Knauf/33928-20055	China	240000 +/- 1300	720 +/- 110	1970 +/- 32
2(Duplicate)	Knauf/33928-20055	China	241000 +/- 1300	730 +/- 100	1960 +/- 32
3	MIC/33966-12077	China	238000 +/- 1300	930 +/- 120	2130 +/- 34
4	Proroc/Certainyeed	US	226000 +/- 1200	990 +/- 120	370 +/- 14
5	National Gypsum/Gold Bond	US	210000 +/- 1200	2010 +/- 150	460 +/- 16
6	GP/Tough Rock	US	220000 +/- 1200	1210 +/- 130	844 +/- 21

A. Major - Calcium
Present - Iron, Strontium, Sulfur
Note: the sulfur line appears as week peak in the XRF spectrum of each sample
(sulfur cannot be quantified in these samples with Nitton XRF unit)

B. XRF Results (total concentration) in ppm +/- 1 standard deviation

Table 3 Tentatively Identified Organic Compounds, estimated concentration (mg/kg)

Sample #		1		2		3		4		5		6	
Tentatively Identified Organic Compounds		US Gypsum/Hamilton		Knauf/33928-20055		MIC/33966-12077		PROROC/Certainteed		National Gypsum/Gold Bond		GP/Tough Rock	
		US		China		China		US		US		US	
		Gypsum	Paper	Gypsum	Paper	Gypsum	Paper	Gypsum	Paper	Gypsum	Paper	Gypsum	Paper
Propylene Glycol	3.74									1.67			
Ethanol, 2-butoxy-	6.40									0.99			
Hexylene Glycol	6.60									1.88			
2-Propanol, 1-butoxy-	6.94									0.76			
Ethanol, 2,2'-oxybis-	7.24					3.62							
Hexanoic acid	7.38										1.48		
Ethanol, 2,2'-oxybis-	7.43												
2-Propanol, 1-(2-methoxy-1-methylethoxy)-	7.83			1.17									
Etane, 1,1'-oxybis[2-ethoxy-]	7.86			3.29	3.15								
2-Propanol, 1-(2-methoxypropoxy)-	8.03			2.05									
dipropylene glycol	8.52					2.56							
Hexanoic acid, 2-ethyl-	9.40									0.65			
1,3-Pentanediol, 2,2,4-trimethyl-	10.04					1.45							
Ethanol, 1-(2-butoxyethoxy)-	10.46			6.94	4.26	23.92	1.07						
Unknown	11.11					2.39							
Quinoline	11.27									0.55			
Unkown	11.45					1.52							
Unknown	11.49					1.77							
2-Propanol, 1-[2-(2-methoxy-1-methylethoxy)-1-methylethoxy]-	11.68			0.80									
2-Propanol, 1-[2-(2-methoxy-1-methylethoxy)-1-methylethoxy]-isomer	11.74			2.22									
2-Propanol, 1-[2-(2-methoxy-1-methylethoxy)-1-methylethoxy]-isomer	11.78			0.97									
Hexaethylene glycol dimethyl ether (?)	11.92			1.37									
2-Propanol, 1-(2-methoxy-1-methylethoxy)- isomer	11.96			1.48	1.69								
Cyclohexasiloxane, dodecamethyl-	11.99									0.55			
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	12.57				18.35					1.00			
Propanoic Acid, 2-methyl-,2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester	12.57						2.79						
Propanoic Acid, 2-methyl-,2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester+unknown	12.63			57.84		92.38							
Propanoic Acid, 2-methyl-,2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester+unknown	12.83			50.45		83.57							
Vanillin	13.08				1.98				0.98	0.53	1.56		
Cyclododecane	13.75					6.24							
Phenol, 2,6-bis(1,1-dimethylethyl)-4-ethyl-	14.81				1.78								
Unknown	15.11										1.21		
Cedrol	15.47									1.26			
Benzyl Benzoate	16.84				4.24								
Homomenthyl salicylate	17.94			0.58									
n-Hexadecanoic acid	18.27		1.29		1.98	1.19			1.12	0.79	2.44		
9-Octadecenoic acid, (E)- or oleic acid	19.72		2.76					0.19			1.23		
Bis(2-ethylhexyl) maleate	19.86				7.00		1.01						
Octadecanoic acid	19.87										1.91		
C21 alkane	20.16						8.15	0.20				24.51	1.14
n-alkane	20.89	0.27	1.62	0.75	1.94			0.65		0.83		79.78	3.36
Tetracosane	21.60	0.45	3.56	1.71	3.56	2.13		1.56	1.32	1.89	1.83	198.23	7.97
morpholine, 4-phenyl-	22.26						2.13						
C25 alkane	22.27	0.62	6.61	2.16	8.57	2.57		2.76	3.29	3.03	4.96	356.70	14.26
diethyleneglycol dibenzoate isomer	22.34	0.39	6.28		18.13		7.98	0.18	2.93	0.61	8.66		
unknown	22.68						1.32	0.19					
C26 alkane	22.91	0.52	7.02	1.87	3.88	2.21		2.89	3.69	3.48	3.85	455.65	18.01
C26 alkane	23.31											18.94	0.86
C26 alkane	23.54	0.42	7.36	2.04	5.53	2.95		3.07	4.04	3.47	4.86	530.11	20.66
Alkane	23.92							0.17				32.47	1.32
Octacosane	24.15					1.12		1.37	3.05	1.54	3.58		
Alkane	23.99											20.41	
Unknown	24.44						0.91						
C28 alkane	24.14	0.29	4.47	0.92	3.07							113.86	5.60
C29 alkane	24.77	0.23	4.09	0.83	9.83	1.08	1.20	1.20	2.58	1.16	3.88	126.95	6.18
alkane	26.28		2.48		3.13	0.72	3.13	0.60	1.46		3.34	125.69	5.77
alkane	27.21		1.99		3.11		3.11	0.30	0.94		2.78	108.49	4.35
Binaphthyl sulfone isomer	27.30	0.27						0.25					
Binaphthyl sulfone isomer	28.19					0.59							
Hentriacontane	28.30		1.33										
C33 n-alkane	28.30										2.02	74.28	2.68
beta.-Sitosterol	29.51	0.17											
Tetratriacontane	29.60		0.86								1.65	50.23	1.62
Octadecanoic acid, ethenyl ester	30.82		2.07						1.43		1.13		
Alkane	30.88												0.84
C35 Alkane	31.13											28.45	
18-Pentatriacontanone	32.79		0.87										
Unknown	32.79								0.94		0.89		
Total organic		7.55	73.72	142.11	118.61	233.80	49.84	18.31	29.91	30.46	69.11	2344.74	95.80

Appendix M

Technical Team Participants

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