

Fw: Attorney General Building Carpet Update

Scott Miller

to:

Debbie Jourdan

04/27/2012 08:47 AM

[Hide Details](#)

From: Scott Miller/R4/USEPA/US

To: Debbie Jourdan/R4/USEPA/US@EPA

1 Attachment



April 26, 2012 Carpet Status letter.pdf

Debbie,
Please save this to SDMS for Capitol City Plume.
Thank you,

Scott Miller
Remedial Project Manager
Superfund Division
Superfund Remedial Branch
Section C
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
Phone (404) 562-9120
Fax (404) 562-8896

-----Forwarded by Scott Miller/R4/USEPA/US on 04/27/2012 08:47AM -----

To: Scott Miller/R4/USEPA/US@EPA
From: "Ashley Cousins" <acousins@acessllc.com>
Date: 04/26/2012 05:46PM
Cc: "Buddy Smith" <asmith@bainbridgemims.com>, <RTambling@ago.state.al.us>
Subject: Attorney General Building Carpet Update

(See attached file: April 26, 2012 Carpet Status letter.pdf)

Hi Scott-

Please find attached letter with an update on the carpet in the Attorney General Building.

Let me know if you have any questions or need additional information.

Ashley



April 26, 2012

Mr. Scott Miller
Remedial Project Manager, Superfund Division
Superfund Remedial Branch, Section C
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: Capital City Plume
Indoor Air Samples

Dear Scott *Scott*

Thank you for providing the results from the samples collected on the right-of-way adjacent to several State buildings in February and responses to my March 1, 2012 email with questions regarding the proposed additional sampling on State property. I have a few additional questions, particularly about the GORE analytical method and hope that we can discuss those at your convenience. In the meanwhile, I wanted to provide you with an update and clarification on the testing that the State has been performing related to the carpet in the Subbasement of the Attorney General's building.

As you are aware, the State of Alabama has been investigating the results of the indoor air samples collected by the USGS in August 2011. EPA indoor air results indicated the presence of typical indoor air contaminants that were within background levels and pose no unacceptable risk to humans (EPA Press Release October 26, 2011). The indoor air samples contained concentrations of Total Petroleum Hydrocarbons (TPH), reported by the GORE laboratory as a "greater than" concentration, expressed as $\mu\text{g}/\text{m}^3$. According to Jay Hodny at GORE laboratories, the calculated concentration may be biased low as the uptake rate slows, when the mass exceeds 50 μg , thus GORE reports TPH with a "greater than" symbol. All of the samples collected inside the Attorney General's building contained a mass of greater than 50 μg due to the one-week sample duration and the fact that the carpet in the area is emitting volatile organic compounds.

Based on the TPH results, the State evaluated potential indoor sources that were contributing to the indoor air quality and causing the "vinyl" odor in the Subbasement area. Initially, the cleanout to the sanitary sewer line was removed and a multigas meter was used to monitor for the presence of hydrogen sulfide, oxygen and LEL. There was no hydrogen sulfide detected and the LEL readings were all zero. The oxygen concentrations were normal. Manufacturers of

the carpet tiles and the adhesive were contacted to determine if there had been similar conditions associated with their products. The adhesive manufacturer indicated that their product did not contain volatile organic compounds. The carpet manufacturer offered to analyze the carpet tiles to determine if they were emitting volatile organic compounds (VOCs).

Analysis of the GlasBac carpet tiles using a chamber emission test indicated that the installed carpet squares in the subbasement (Samples 1 and 2) were emitting about 190 and 493 $\mu\text{g}/\text{m}^2/\text{hr}$ of VOCs. Identified VOCs in the emissions tests are within the carbon range reported by GORE as Total Petroleum Hydrocarbons (C4-C20). A carpet tile from inventory (Sample 3) was also analyzed, and shown to be emitting 92 $\mu\text{g}/\text{m}^2/\text{hr}$ of VOCs. Chromatograms of the three carpet tile samples are included in Attachment A. It is apparent that Samples 1 and 2 have a similar pattern of peaks, whereas sample 3 has a different pattern. Samples 1 and 2 were both from installed tiles and sample 3 was from an inventory tile that had not been installed.

InterfaceFLOR prepared a memo of the sample results (See Attachment B), wherein they reported the following:

The levels of alcohols and their derivatives present in sample 2 indicates a possible incompatibility between the carpet's vinyl backing and levels of moisture and pH in the concrete sub-floor. Prior to installation the concrete should have been tested for moisture and pH levels. In Situ probe relative humidity moisture emission rates should have been at or below 75% rH (ASTM F 2170) and pH should have been 7.0 – 9.0 (ASTM F 710). When installed over concrete with moisture in excess of 75% rH (ASTM F 2170) and alkalinity above 9.0 (ASTM F 710) the carpet's vinyl backing can break down resulting in a solid phase reaction known as plasticizer degradation. This breakdown is a direct result of the carpet being in contact with concrete that was not within the specifications required under the installation instructions for InterfaceFLOR's Glasbac backing.

The current VOC levels of Sample #2 are not above the threshold limit of 500 ($\mu\text{g}/\text{m}^2/\text{hr}$) but the levels of alcohols suggest concrete conditions are/have been most likely contributing to indoor air quality concerns as a result of an incompatibility between the carpet backing and the concrete being out of specification for installation of a vinyl backed carpet tile in regards to moisture and alkalinity.

The State performed preliminary moisture testing of the concrete in November 2011 using Wagner relative humidity probes, which indicated an exceedance of the moisture requirements. Independent testing was performed in February 2012, using both the Calcium Chloride test (ASTM F1869-11) and comparing two relative humidity probes (ASTM 2170-09) to determine the moisture vapor emission rate (MVER) and the relative humidity (rH) of the concrete slab. Readings for both MVER and rH exceeded the manufacturer's recommendations in several locations, however, there is no visual evidence of moisture damage. Results are summarized on Table 1.

The State has retained a textile chemist familiar with plasticizer degradation to evaluate the test results and recommend appropriate treatment of the slab and a replacement product that will

not continue to produce the "vinyl-smell" associated with the plasticizer degradation of the carpet backing. The general recommendations include:

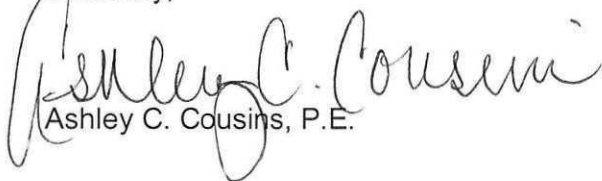
- Remove of the existing carpet in the Subbasement area (approximately 5200 square feet)
- Physically remove the adhesive by scraping. No chemicals will be used for removal.
- Allow the concrete slab one to two weeks to breathe with increased air exchange rate.
- Qualitative testing and observations to determine if the odor is still present.
- Determine if a surface treatment is needed to seal the floor (if odors still present in concrete after breathing period)
- Install surface covering that does not contain plasticizer.

The State has retained an architect to prepare specifications based on the textile chemist's recommendations for removal of the existing carpet and replacement with a new product so that the project can be let for bid.

The Subbasement is the only area where odor complaints have been indicated and we are confident that we have isolated the carpet as a major source of the VOC emissions and TPH concentrations reported using the GORE method. There are currently no employees working in the Subbasement area and there have not been any additional complaints received from Attorney General employees. While we understand from your email yesterday that EPA wants to sample the uncarpeted areas of the Subbasement, we believe that TPH concentrations in indoor air samples will be biased by the carpet and the stored inventory tiles. Therefore, we would request that no testing be conducted until the carpet has been removed. In addition, we would request that such additional testing be performed using EPA method TO-15 in accordance with EPA guidance for collecting indoor air samples, and not the GORE method.

Please let me know if you have questions regarding the status of the carpet evaluation and replacement.

Sincerely,



Ashley C. Cousins, P.E.

cc: Buddy Smith
Robert Tambling

Table 1. Results of moisture and relative humidity testing, Attorney General's Building, 501 Washington Avenue, Montgomery, AL
 Testing by Stoner Services

3/1/12		Calcium Chloride Test	In Situ-Probe Test		pH Scarified
Carpet Manufacturer Recommendation		3.00	Wagner 75%	Delmhorst 75%	Between 7-9
ID	Location	lbs/1000 sq ft/24 hours	% rH	% rH	
A	Multi-purpose room	3.00	78%	NA	9
B	Multi-purpose room	3.00	NA	72.2%	8
C	Mult-purpose room	4.17	NA	77.3%	9
D	Office SB23	2.83	77%	NA	9
E	Office SB21	4.02	NA	82.2%	10
F	Reception SB15	3.02	82%	79.5%	9
G	Lobby SB14	3.36	76%	73.2%	9

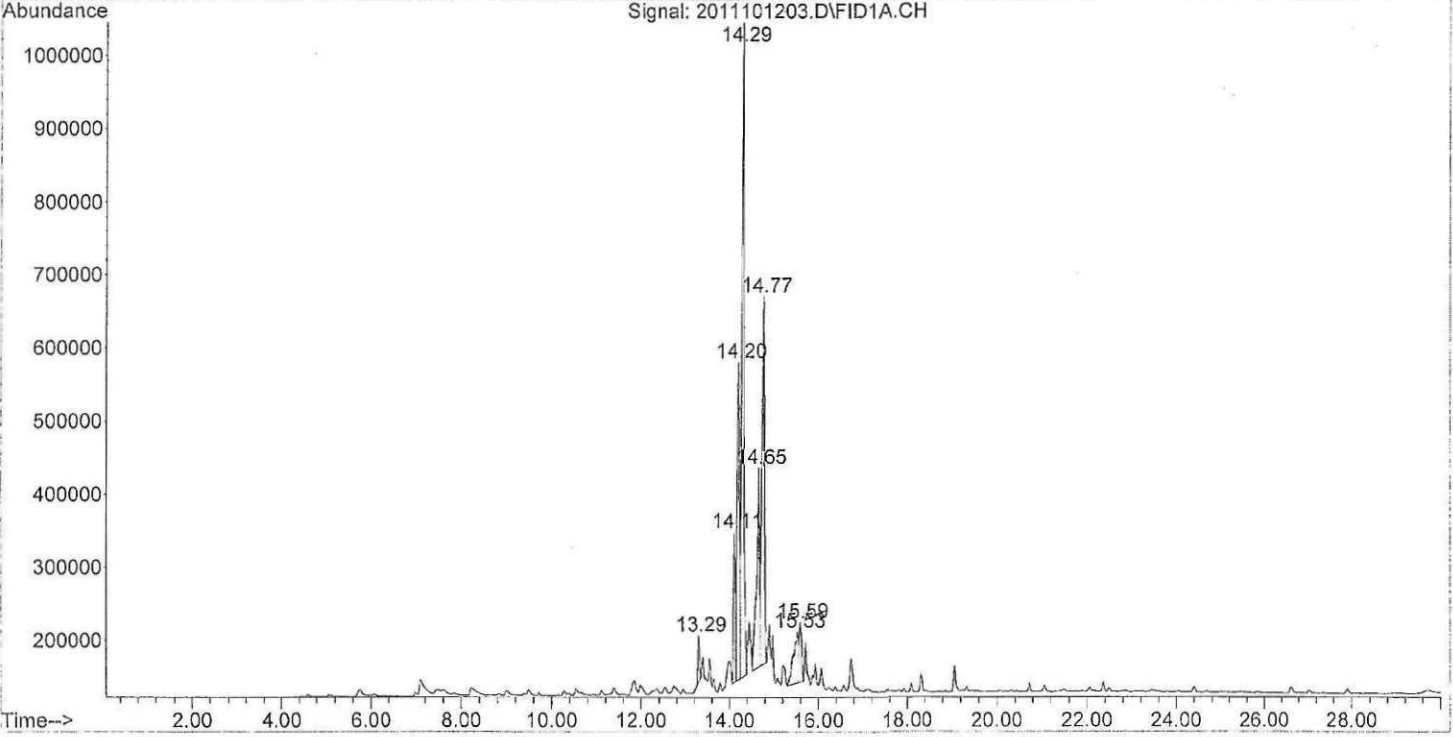
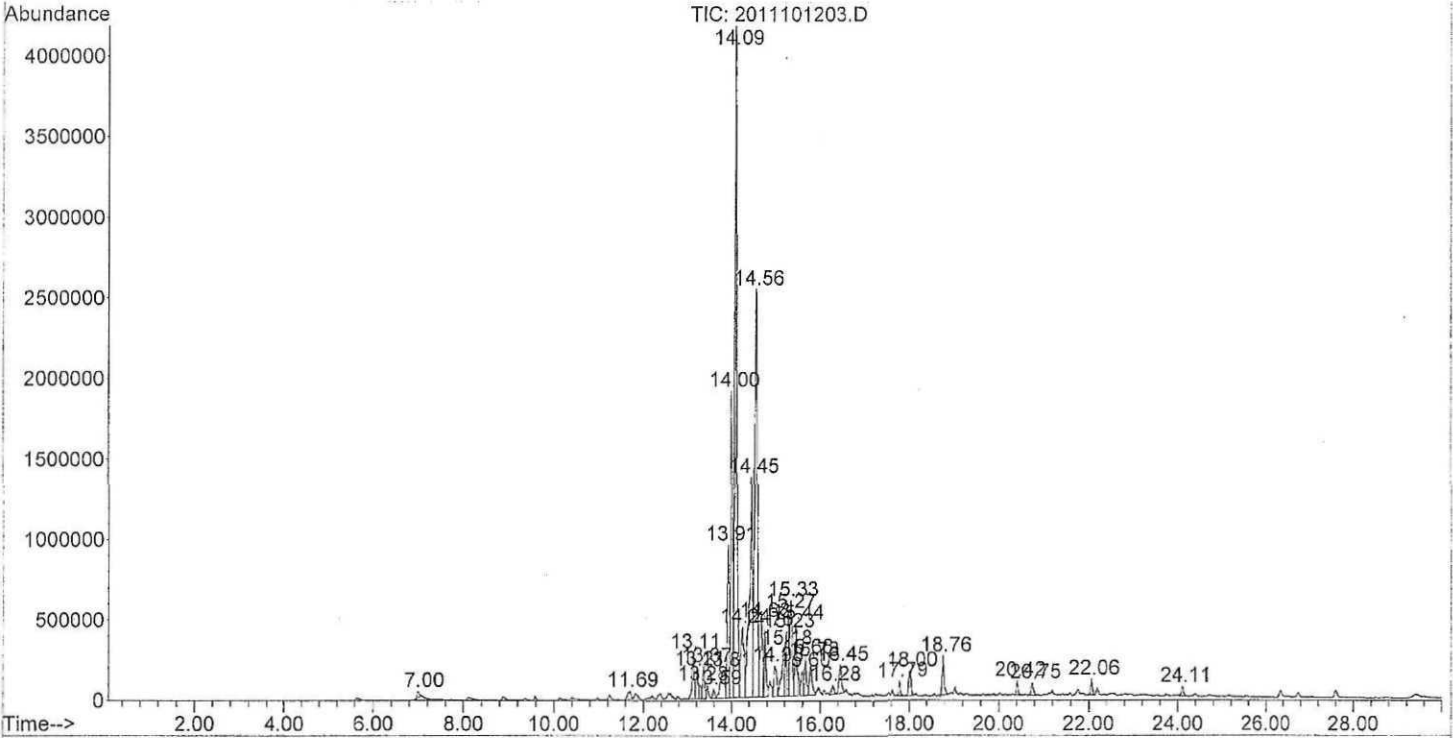
ATTACHMENT A

Area Percent Report

Data Path : C:\MSDCHEM\1\data\
Data File : 2011101203.D
Acq On : 13 Oct 2011 12:18
Operator :
Sample : AL State closet *PVC #1*
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration Parameters: events.e
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Method : C:\MSDCHEM\1\METHODS\TEST20.M
Title :



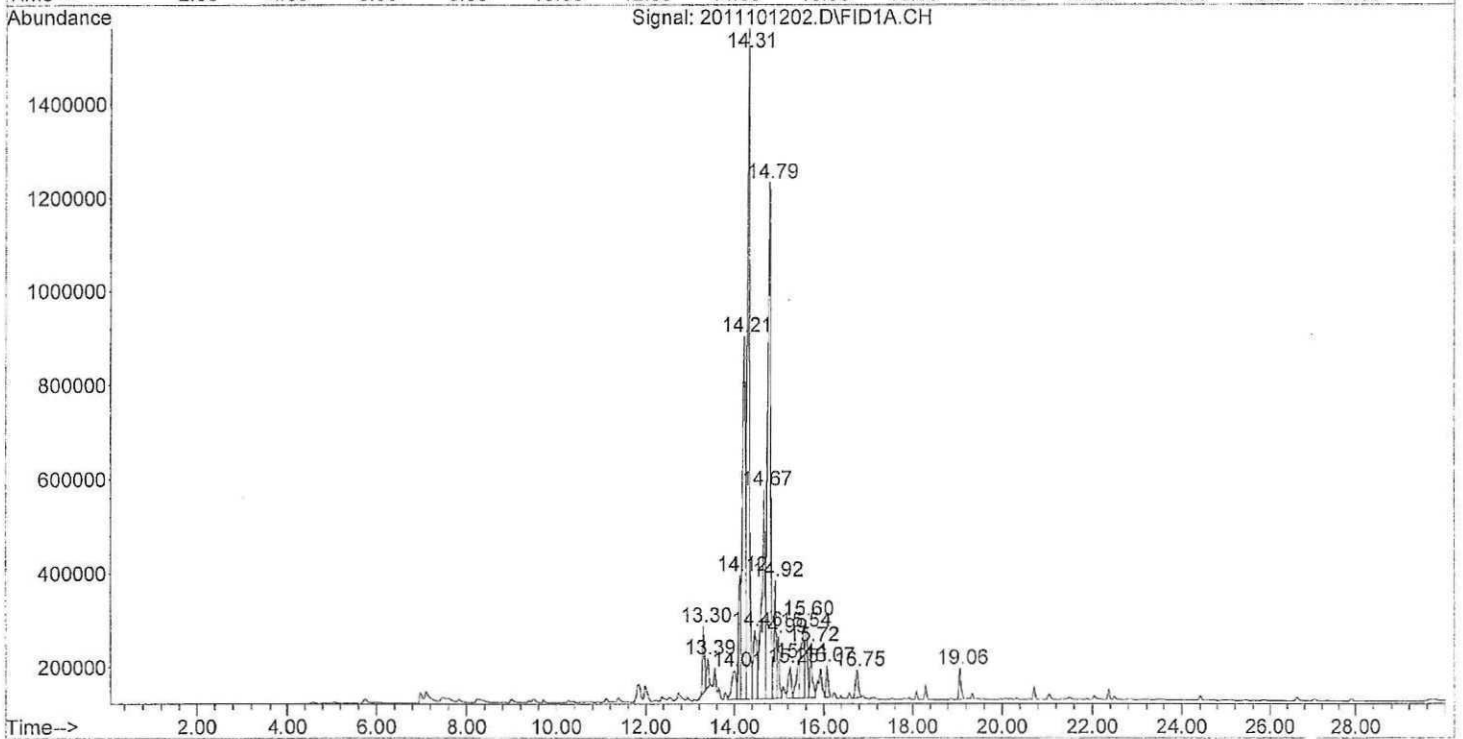
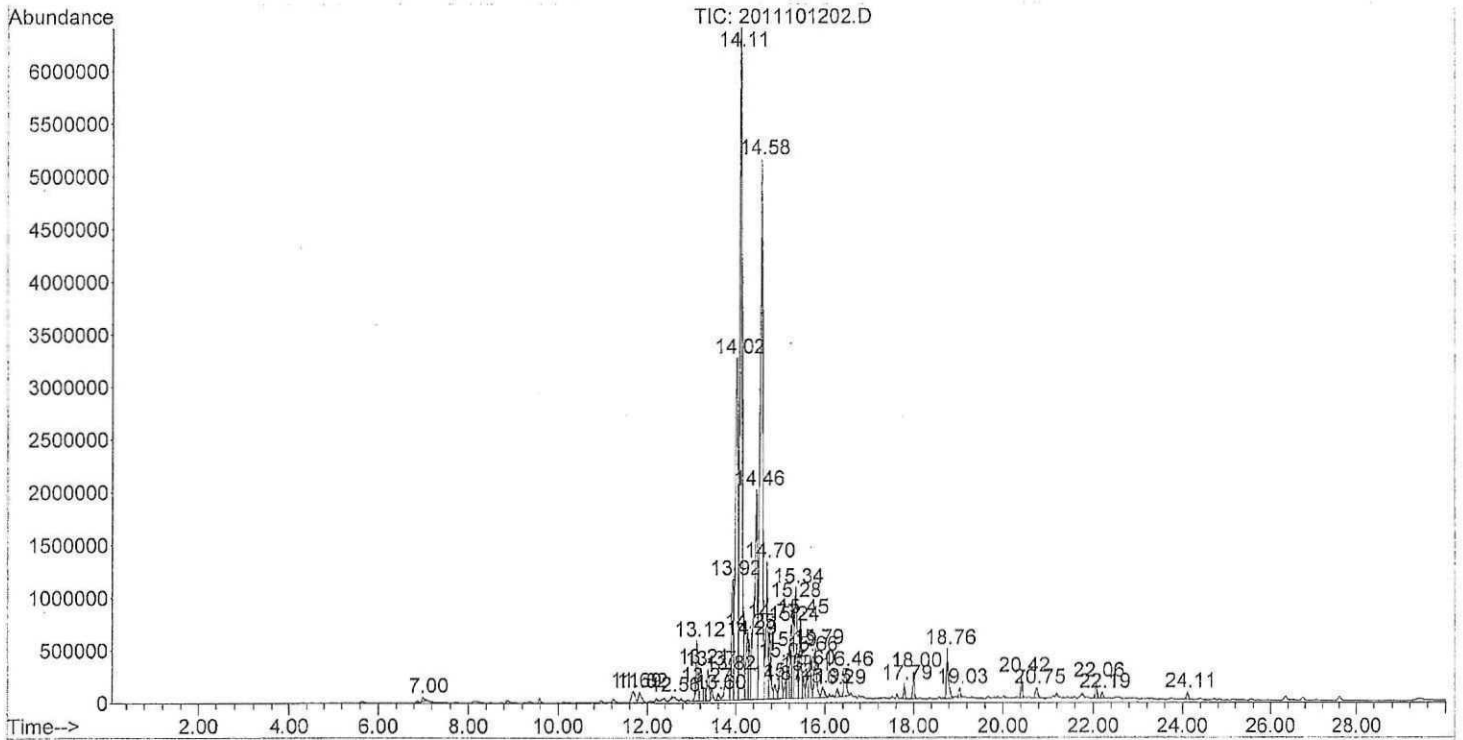
Area Percent Report

Data Path : C:\MSDCHEM\1\data\
Data File : 2011101202.D
Acq On : 13 Oct 2011 11:27
Operator :
Sample : AL State hallway
Misc :
ALS Vial : 2 Sample Multiplier: 1

#2

Integration Parameters: events.e
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Method : C:\MSDCHEM\1\METHODS\TEST20.M
Title :



Area Percent Report

Data Path : C:\MSDCHEM\1\data\
Data File : 2011101201.D
Acq On : 13 Oct 2011 10:36
Operator :
Sample : AL State attic
Misc :
ALS Vial : 1 Sample Multiplier: 1

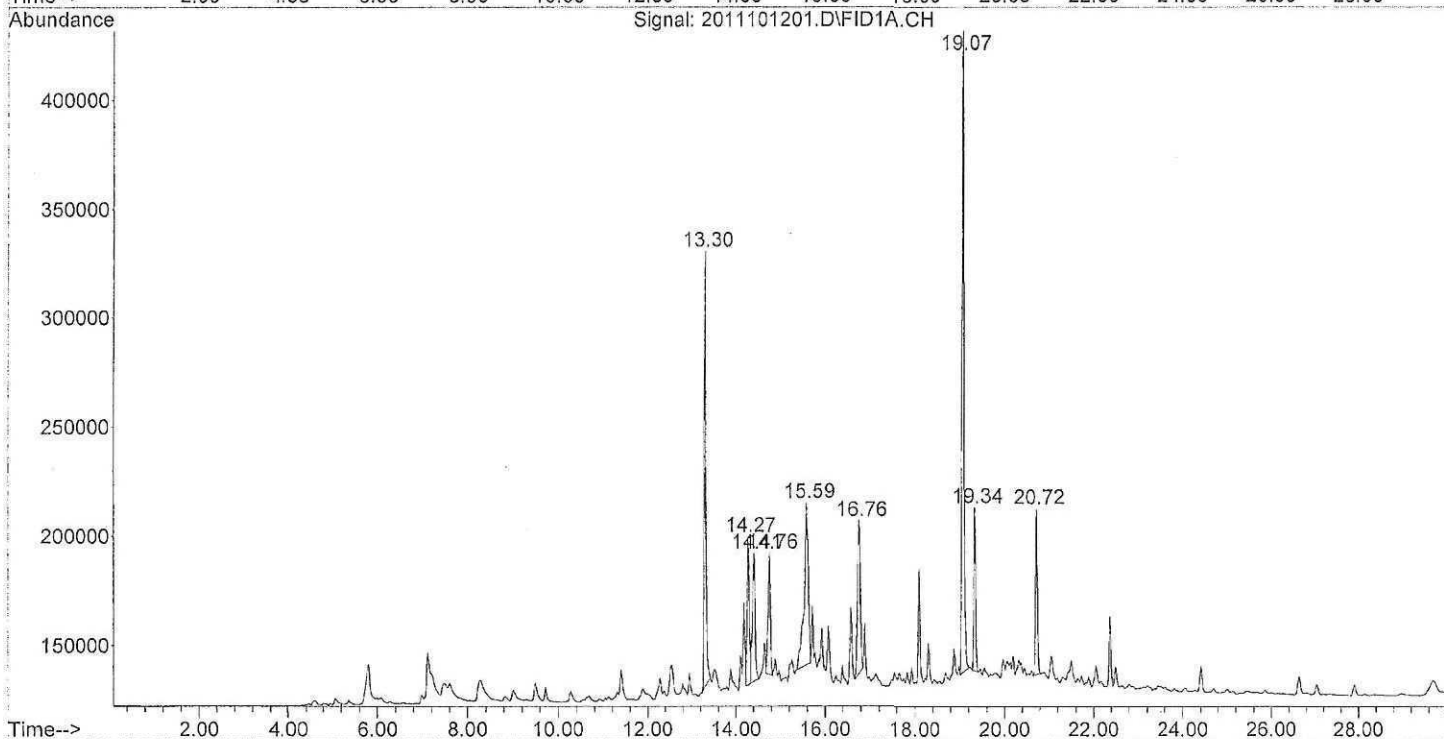
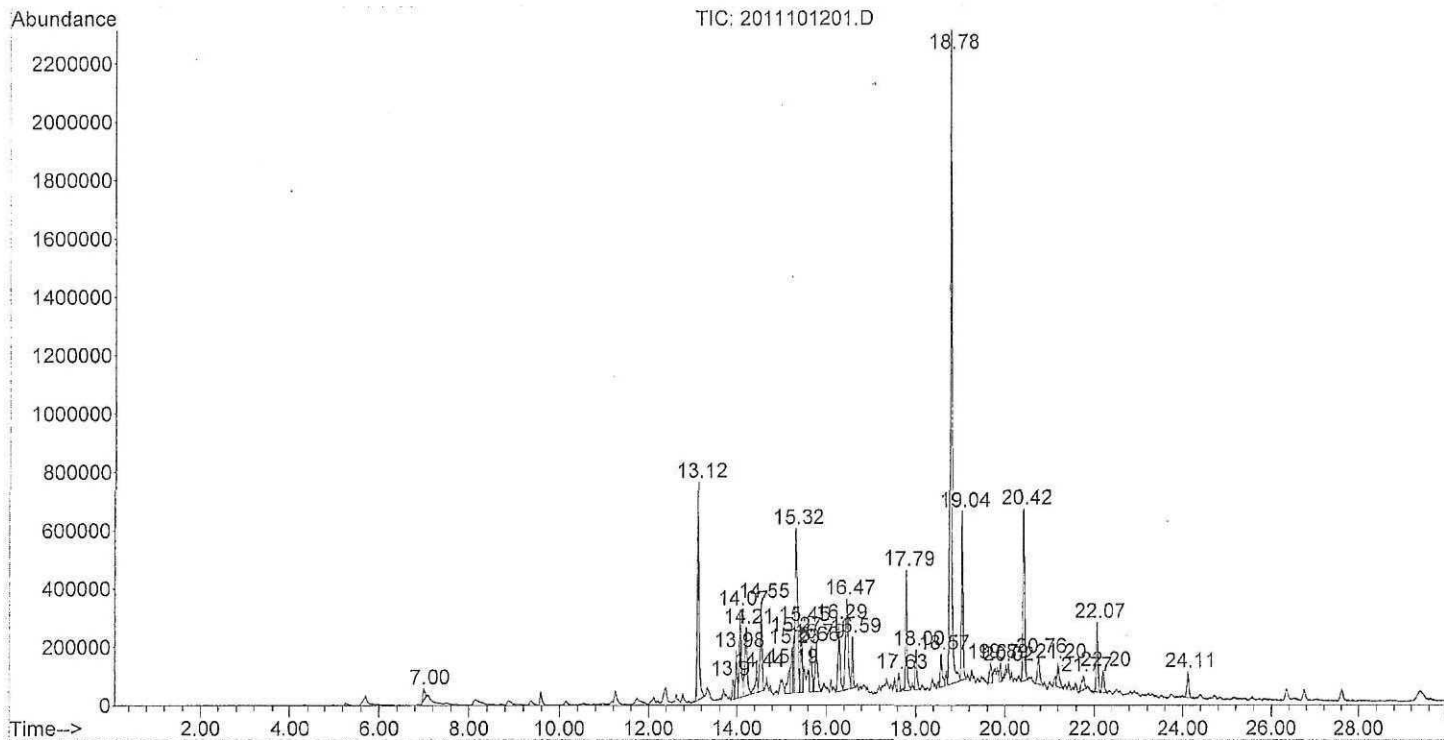
PVC

#3

10460

Integration Parameters: events.e
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Method : C:\MSDCHEM\1\METHODS\TEST20.M
Title :



ATTACHMENT B

InterfaceFLOR®

TO: WHOM IT MAY CONCERN
FROM: JIMMY GARRETT
DATE: 10/17/11
RE: ALABAMA STATE OFFICE BUILDING VOC

LAB LOG # T10460

Three carpet samples with GlasBac were received from Alabama State Office Building in Montgomery, AL for VOC testing. Customer complained of odor. The samples were individually wrapped in foil and plastic. Indoor air samples taken in the area indicated elevated levels of petroleum hydrocarbons and other aromatic compounds. No other information was received.

Sample # 1: Tile from mechanical closet with adhesive on 1/2 of tile

Sample # 2: Tile from hallway in subbasement

Sample # 3: Tile from inventory stock

VOC Test: The samples were die cut and loaded in 50 liter chamber for standard 24 hour VOC test.

	#1	#2	#3
Major VOC Components	VOC ($\mu\text{g}/\text{m}^2/\text{hr}$)	VOC ($\mu\text{g}/\text{m}^2/\text{hr}$)	VOC ($\mu\text{g}/\text{m}^2/\text{hr}$)
2-ethyl-1-Hexanol	3.2	9.4	11.8
3,7,11-trimethyl-1-Dodecanol	13.2		
3-methyl-1-Hexene*	30.8		
3,3,5-trimethyl-1-Hexene*		69.5	

6-methyl-1-Octanol	61.3	108.6	
2-ethyl-Hexanoic acid*			4.8
3-ethyl-1-Pentene*	24.2		
3,4-dimethyl-1-Pentanol		47.5	
2,3-dimethyl-1-Pentene*	40.2	96.6	
2-(2-butoxyethoxy)-Ethanol*			9.0
Caprolactam		26.0	31.5
Cyclododecane			18.3
Total VOC's ($\mu\text{g}/\text{m}^2/\text{hr}$)	190.1	492.8	92.4

*Best Library Fit

GC data files: 2011101203, 2011101202, 2011101201

Discussion:

The samples all contained VOC's within the allowable limits of the CRI Green Label Plus certification ($\mu\text{g}/\text{m}^2/\text{hr}$).

Note:

Sample tile #2 – Sub Basement – The levels of alcohols and their derivatives present in this sample indicates a possible incompatibility between the carpet's vinyl backing and levels of moisture and pH in the concrete sub-floor. Prior to installation the concrete should have been tested for moisture and pH levels. In Situ probe relative humidity moisture emission rates should have been at or below 75% rH (ASTM F 2170) and pH should have been 7.0 – 9.0 (ASTM F 710). When installed over concrete with moisture

in excess of 75% rH (ASTM F 2170) and alkalinity above 9.0 (ASTM F 710) the carpet's vinyl backing can break down resulting in a solid phase reaction known as plasticizer degradation. This breakdown is a direct result of the carpet being in contact with concrete that was not within the specifications required under the installation instructions for InterfaceFLOR's Glasbac backing.

The current VOC levels of Sample #2 are not above the threshold limit of 500 ($\mu\text{g}/\text{m}^2/\text{hr}$) but the levels of alcohols suggest concrete conditions are/have been most likely contributing to indoor air quality concerns as a result of an incompatibility between the carpet backing and the concrete being out of specification for installation of a vinyl backed carpet tile in regards to moisture and alkalinity.

InterfaceFLOR assumes no liability for issues relating to or resulting from installation over concrete containing moisture and alkalinity in excess of those levels required and noted in the Interface Installation Instruction.