



PO Box 385
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INDOOR AIR QUALITY EVALUATION REPORT

Roofing Project – Roofing Air Vapor Barrier on Exterior Walls

Pinelands Regional High School

Pinelands Regional School District
520 Nugentown Road
Little Egg Harbor, NJ 08087

Survey date: 09/01/2017
Inspection performed by: Domenic D’Errico, CIEC

Section I

Introduction

AHERA Consultants Inc. was retained by the Pinelands Regional School District to conduct indoor air quality analysis and testing utilizing a TO-15 canister in a specified area of the Pinelands Regional High School located in Little Egg Harbor, New Jersey. This study was performed at the request of the District in response to concerns by school staff of possible indoor air quality issues associated with the summer roofing project.

Section II

Physical Inspection

Existing Conditions

On September 1, 2017 I, Domenic D'Errico, CIEC, arrived at the Pinelands High School and met with Mr. Robert Sannino and Mr. Robert Prate, from New Road Construction Management. He escorted me to an area beneath active roof replacement activities. Installation of the roofing air vapor barrier was being accomplished on this date.

I conducted a cursory visual inspection of the space. Several drop ceiling tiles were open in the hallway. I noted a corrugated metal ceiling deck exists in this area above the drop ceiling. A slight odor was detected upon entrance into this area and appeared to be from the roofing activity. The auditorium/balcony area likewise has an exposed corrugated metal ceiling deck supported by steel trusses above. Roof replacement activities were being performed and observed. At the time of sampling, occupant activities to the areas tested had been restricted and most of the buildings HVAC systems were not operating due to the construction activities.

Ambient air sampling was conducted utilizing a TO-15 canister for detection of Volatile Organic Compounds (VOC's) for compounds that may be associated with the roofing activities.

Section III

Sampling Procedures

- ◇ Laboratory calibrated TO-15 canisters were utilized and field verified. The following areas within the High School were tested:

First Floor Hallway and Auditorium Adjacent Interior Side Stage

- ◇ The sampling media was submitted to EMSL Analytical Laboratories in Cinnaminson, NJ for analysis. Air samples were analyzed within a 3-day turnaround period.

Section V

Interpretation of Results

At this time, there are no governmental standards regarding Indoor Air Quality. The Occupational Safety and Health Association (OSHA) and the National Institute of Occupational Safety and Health (NIOSH), as well as other occupational health related associations, have permissible exposure levels (PELs), recommended exposure limits (RELs), or other limit values for many but not all Volatile Organic Compounds. For the purposes of this report USEPA Residential Air Generic

Screening Levels were utilized since this would be a comprehensive comparison standard. (See EMSL TO-15 Report) provided herein for comparative levels. NIOSH and OSHA exposure limit comparisons are provided as well.

Under the Public Employees Occupational Safety and Health Program there is currently an indoor air quality standard for the state of New Jersey (NJAC 12:100-13). Additionally, there are recommendations under ASHRAE "The American Society of Heating, Refrigeration, and Air Conditioning Engineers for the Indoor Environment.

Under NJAC 12:100-13 a range of 68 to 79 degrees Fahrenheit is the desired temperature range to maintain with Carbon Dioxide (CO²) not exceeding 1000 ppm. If Carbon Dioxide (CO²) exceeds 1000 PPM the HVAC system should be evaluated for proper operation.

ASHRAE recommends that a relative humidity between 30% and 60% are acceptable, readings in excess of 70% is considered a friendly environment to microorganisms such as mold.

Carbon Monoxide (CO) levels based on OSHA limits long-term workplace exposure levels to 50 ppm over an 8-hour time weighted average. The Threshold Limit Value or TLV for carbon monoxide is 25 ppm.

Section VI

Observations/Recommended Response Actions

Overall Observations: Results of the air testing conducted within this facility at the time of testing detected the following compounds:

First Floor Hallway and Auditorium Adjacent Interior Side Stage: *Ethanol, Freon 11, Isopropyl alcohol, Acetone, n-Hexane, Ethyl acetate, Cyclohexane, n-Heptane, Toluene, Ethylbenzene, Xylene (PM), Xylene (Ortho), Isopropylbenzene, Ethyltoluene, Trimethylbenzene (Possible background sources of these materials are listed in the attached laboratory report). Additionally, tentatively identified compound results indicated several unknown hydrocarbons, Methyl ester, Pentane, Unknown Substituted Benzene, Noane, Decane, Unknown Substituted Cyclohexane.*

All of the aforementioned compounds were detected at or below any NIOSH or OSHA PEL's or REL's. Additionally, all of the aforementioned compounds were detected at or below the USEPA Residential and Industrial Screening levels with the exception of Ethylbenzene (detected above Residential Screening but below Industrial Screening) and 1,2,4 Trimethylbenzene (detected above both the Residential and Industrial Screening Levels). Unknown compounds as indicated in the tentatively identified compounds do not have any guidance levels.

Recommendations:

On this date, at the time of testing roofing install odors were noted by smell. A number of vehicles associated with the construction were located directly adjacent the building perimeter and active Lull's/lifts were being utilized in the area. Limiting open doors, windows and shutting down and / or sealing any rooftop HVAC units during roofing activities should help in limiting undesirable indoor air quality conditions.

Relocating / restricting staff away from active construction areas should continue to be employed when possible. Combustion type equipment when utilized should be positioned down wind of potential intake pathways when feasible. Following construction / roofing activities opening doors and windows to allow fresh air to exchange within the space should be accomplished.

Finally, when required increasing fresh air exchanges within any affected areas would help ameliorate and/or maintain acceptable indoor air quality.

EMSL laboratory report(s) - (see attachments)

**EMSL Analytical**

200 Route 130 North, Cinnaminson, NJ 08077
 Phone/Fax: (856)858-4800 / (856)858-4571
<http://www.EMSL.com> to15lab@EMSL.com

EMSL Order #: **491700897**
 Customer ID: **AHER50**
 Customer PO: **Not Available**

Attn: **Domenic D'Errico** Phone: **609-652-1833**
Ahera Consultants, Inc. Fax: **609-652-1140**
PO Box 385
Oceanville, NJ 08231-0385

Project: **Pinelands HS** Date Collected: **9/1/2017**
 Date Received: **9/1/2017**

Laboratory Report- Sample Summary

EMSL Sample ID.	Client Sample ID.	Start Sampling Date	Start Sampling Time
491700897-0001	Auditorium / Hallway	9/1/2017	8:10 AM

If "Preliminary Report" is displayed in the signature box; this indicates that there are samples that have not yet been analyzed, that are in a preliminary state, or that analysis is in progress but not completed at the time of report issue.

Report Date: 9/5/2017 **Report Revision:** R0 **Revision Comments:** Initial Report

Marjorie Howiey, Laboratory Manager
or other approved signatory

Test results meet all NELAP requirements unless otherwise specified.

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Project: **Pinelands HS**

Sample ID: **Auditorium / Hallway**

<u>Analysis</u>	<u>Analysis Date</u>	<u>Analyst Init.</u>	<u>Lab File ID</u>	<u>Canister ID</u>	<u>Sample Vol.</u>	<u>Dil. Factor</u>
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

Target Compound Results Summary

<u>Target Compounds</u>	<u>CAS#</u>	<u>MW</u>	<u>Result ppbv</u>	<u>RL ppbv</u>	<u>Q</u>	<u>Result ug/m3</u>	<u>RL ug/m3</u>	<u>Comments</u>
Propylene	115-07-1	42.08	ND	1.0		ND	1.7	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	ND	0.50		ND	2.5	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.9	ND	0.50		ND	3.5	
Chloromethane	74-87-3	50.49	ND	0.50		ND	1.0	
n-Butane	106-97-8	58.12	ND	0.50		ND	1.2	
Vinyl chloride	75-01-4	62.50	ND	0.50		ND	1.3	
1,3-Butadiene	106-99-0	54.09	ND	0.50		ND	1.1	
Bromomethane	74-83-9	94.94	ND	0.50		ND	1.9	
Chloroethane	75-00-3	64.52	ND	0.50		ND	1.3	
Ethanol	64-17-5	46.07	6.3	0.50		12	0.94	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.50		ND	2.2	
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	2.7	0.50		15	2.8	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	1.4	0.50		3.5	1.2	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.4	ND	0.50		ND	3.8	
Acetone	67-64-1	58.08	4.1	0.50		10	1.2	
1,1-Dichloroethene	75-35-4	96.94	ND	0.50		ND	2.0	
Acetonitrile	75-05-8	41.00	ND	0.50		ND	0.84	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND	0.50		ND	1.5	
Bromoethane(Ethyl bromide)	74-96-4	108.0	ND	0.50		ND	2.2	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND	0.50		ND	1.6	
Carbon disulfide	75-15-0	76.14	ND	0.50		ND	1.6	
Methylene chloride	75-09-2	84.94	ND	0.50		ND	1.7	
Acrylonitrile	107-13-1	53.00	ND	0.50		ND	1.1	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND	0.50		ND	1.8	
trans-1,2-Dichloroethene	156-60-5	96.94	ND	0.50		ND	2.0	
n-Hexane	110-54-3	86.17	55	5.0	D	190	18	Reported Dilution #1
1,1-Dichloroethane	75-34-3	98.96	ND	0.50		ND	2.0	
Vinyl acetate	108-05-4	86.00	ND	0.50		ND	1.8	
2-Butanone(MEK)	78-93-3	72.10	ND	0.50		ND	1.5	
cis-1,2-Dichloroethene	156-59-2	96.94	ND	0.50		ND	2.0	
Ethyl acetate	141-78-6	88.10	0.54	0.50		1.9	1.8	
Chloroform	67-66-3	119.4	ND	0.50		ND	2.4	
Tetrahydrofuran	109-99-9	72.11	ND	0.50		ND	1.5	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.50		ND	2.7	
Cyclohexane	110-82-7	84.16	26	0.50		91	1.7	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.50		ND	2.3	
Carbon tetrachloride	56-23-5	153.8	ND	0.50		ND	3.1	
n-Heptane	142-82-5	100.2	1.4	0.50		5.8	2.0	
1,2-Dichloroethane	107-06-2	98.96	ND	0.50		ND	2.0	
Benzene	71-43-2	78.11	ND	0.50		ND	1.6	
Trichloroethene	79-01-6	131.4	ND	0.50		ND	2.7	
1,2-Dichloropropane	78-87-5	113.0	ND	0.50		ND	2.3	
Methyl Methacrylate	80-62-6	100.12	ND	0.50		ND	2.0	
Bromodichloromethane	75-27-4	163.8	ND	0.50		ND	3.3	
1,4-Dioxane	123-91-1	88.12	ND	0.50		ND	1.8	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	0.50		ND	2.0	

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Project: **Pinelands HS** Sample ID: **Auditorium / Hallway**

Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

Target Compound Results Summary

Target Compounds	CAS#	MW	Result ppbv	RL ppbv	Q	Result ug/m3	RL ug/m3	Comments
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.50		ND	2.3	
Toluene	108-88-3	92.14	7.1	0.50		27	1.9	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.50		ND	2.3	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.50		ND	2.7	
2-Hexanone(MBK)	591-78-6	100.1	ND	0.50		ND	2.0	
Tetrachloroethene	127-18-4	165.8	ND	0.50		ND	3.4	
Dibromochloromethane	124-48-1	208.3	ND	0.50		ND	4.3	
1,2-Dibromoethane	106-93-4	187.8	ND	0.50		ND	3.8	
Chlorobenzene	108-90-7	112.6	ND	0.50		ND	2.3	
Ethylbenzene	100-41-4	106.2	0.71	0.50		3.1	2.2	
Xylene (p,m)	1330-20-7	106.2	3.2	1.0		14	4.3	
Xylene (Ortho)	95-47-6	106.2	1.6	0.50		6.8	2.2	
Styrene	100-42-5	104.1	ND	0.50		ND	2.1	
Isopropylbenzene (cumene)	98-82-8	120.19	0.77	0.50		3.8	2.5	
Bromoform	75-25-2	252.8	ND	0.50		ND	5.2	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.50		ND	3.4	
4-Ethyltoluene	622-96-8	120.2	10	0.50		51	2.5	
1,3,5-Trimethylbenzene	108-67-8	120.2	5.6	0.50		28	2.5	
2-Chlorotoluene	95-49-8	126.6	ND	0.50		ND	2.6	
1,2,4-Trimethylbenzene	95-63-6	120.2	9.9	0.50		48	2.5	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.50		ND	3.0	
1,4-Dichlorobenzene	106-46-7	147.0	ND	0.50		ND	3.0	
Benzyl chloride	100-44-7	126.0	ND	0.50		ND	2.6	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.50		ND	3.0	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.50		ND	3.7	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.50		ND	5.3	
Naphthalene	91-20-3	128.17	ND	0.50		ND	2.6	
Total Target Compound Concentrations:			140	ppbv		510	ug/m3	

Surrogate

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	10	10	100%

Qualifier Definitions**ND = Non Detect**

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

Method Reference

USEPA: Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).



NJDEP Certification #: 03036



USEPA TO-15

External Chain of Custody/ Field Test Data Sheet

EMSL Analytical, Inc.
 200 Route 130 North
 Cinnaminson, NJ 08077
 Ph. (800) 220-3676
 Fax (856) 786-0327

Report To Contact Name: Domenic DiFerrico
 EMSL Order Number (Lab Use Only): 491700897
 Company Name: ALBERT CONSULTANTS INC
 Attention To: GMF
 Address 1: PO BOX 385
 Address 2: CLEAVELAND, NJ 08231-0385
 Address 3: 91117
 Phone No.: 609 650 1533 Fax: 652 1140
 Project Name: PINELANDS HS

Sampled By (Sign): [Signature]
 Sampled By (Name): Domenic DiFerrico
 Total # of Samples: 1
 Date Shipped: 9/1/17
 Sample Collection Zip Code: 08087
 Purchase Order:

Turnaround Time (in Business Days):
 5 Day
 4 Day
 3 Day
 2 Day
 1 Day
 Other

Reporting Format:
 Results Only (Standard Lab Report)
 Full Deliverables (Surcharge may apply)
 Other

Client Field Sample Identification	Field Use - All Information Required!				Lab Use Only				Analysis	Matrix								
	Sampling Start Information		Sampling Stop Information		Canister Information													
	Start Date	Time (24 hr clock)	Canister Pressure (Htg)	Interior Temp. (F)	Barometric Pres. (Htg)	Time (24 hr clock)	Canister Pressure (Htg)	Interior Temp. (F)	Canister ID	Size (L)	Can Cont Batch ID	Outgoing Pressure (Htg)	Incoming Pressure (Htg)	Flow Controller	Reg. ID	Cal Flow (g/min)	Landfill/Vent	
<u>Aved for use / LK & LUCAS</u>	<u>9/1/17</u>	<u>0810</u>	<u>29.6</u>	<u>68.2</u>	<u>1010</u>	<u>1010</u>	<u>29.6</u>	<u>68.5</u>	<u>E0566</u>	<u>16</u>	<u>43500</u>	<u>29.6</u>	<u>3.6</u>		<u>7842</u>	<u>42</u>		<u>CINNAMINSON, N.J.</u>
																		<u>RECEIVED EMSL</u>
																		<u>SEP - 1 11:29</u>

Comments:

Lab Canister Certification
 Analyst Signature (TO-15):

Relinquished by: [Signature] Date/Time: 8/30/17 1110
[Signature] Date/Time: 9/1/17
[Signature] Date/Time: 9/1/17 1130

Received by: [Signature] Date/Time: 9/1/17 1130
[Signature] Date/Time: 9/1/17 1134

Reason for Exchange (circle appropriate):
 Shipping Courier Receiving Sampling Other: Pick up
 Shipping Courier Receiving Sampling Other: Drop off
 Shipping Courier Receiving Sampling Other: AN
 Shipping Courier Receiving Sampling Other:
 Shipping Courier Receiving Sampling Other:



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Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

USEPA Generic Air Screening Level Summary Table

Target Compounds	CAS#	MW	Result ppbv	Q	Result ug/m3	Residential ug/m3	>	Industrial ug/m3	>
Propylene	115-07-1	42.08	ND		ND	3100		13000	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.90	ND		ND	100		440	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.90	ND		ND	N.E.		N.E.	
Chloromethane	74-87-3	50.49	ND		ND	94.0		390	
n-Butane	106-97-8	58.12	ND		ND	N.E.		N.E.	
Vinyl chloride	75-01-4	62.50	ND		ND	0.170		2.80	
1,3-Butadiene	106-99-0	54.09	ND		ND	0.0940		0.410	
Bromomethane	74-83-9	94.94	ND		ND	5.20		22.0	
Chloroethane	75-00-3	64.52	ND		ND	10000		44000	
Ethanol	64-17-5	46.07	6.3		12	N.E.		N.E.	
Bromoethene(Vinyl bromide)	593-60-2	106.90	ND		ND	0.0880		0.380	
Freon 11(Trichlorofluoromethane)	75-69-4	137.40	2.7		15	N.E.		N.E.	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	1.4		3.5	210		880	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.40	ND		ND	31000		130000	
Acetone	67-64-1	58.08	4.1		10	32000		140000	
1,1-Dichloroethene	75-35-4	96.94	ND		ND	210		880	
Acetonitrile	75-05-8	41.00	ND		ND	63.0		260	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND		ND	N.E.		N.E.	
Bromoethane(Ethyl bromide)	74-96-4	108.00	ND		ND	N.E.		N.E.	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND		ND	0.470		2.00	
Carbon disulfide	75-15-0	76.14	ND		ND	730		3100	
Methylene chloride	75-09-2	84.94	ND		ND	100		1200	
Acrylonitrile	107-13-1	53.00	ND		ND	0.0410		0.180	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND		ND	11.0		47.0	
trans-1,2-Dichloroethene	156-60-5	96.94	ND		ND	N.E.		N.E.	
n-Hexane	110-54-3	86.17	55	D	190	730		3100	
1,1-Dichloroethane	75-34-3	98.96	ND		ND	1.80		7.70	
Vinyl acetate	108-05-4	86.00	ND		ND	210		880	
2-Butanone(MEK)	78-93-3	72.10	ND		ND	5200		22000	
cis-1,2-Dichloroethene	156-59-2	96.94	ND		ND	N.E.		N.E.	
Ethyl acetate	141-78-6	88.10	0.54		1.9	73.0		310	
Chloroform	67-66-3	119.40	ND		ND	0.120		0.530	
Tetrahydrofuran	109-99-9	72.11	ND		ND	2100		8800	
1,1,1-Trichloroethane	71-55-6	133.40	ND		ND	5200		22000	
Cyclohexane	110-82-7	84.16	26		91	6300		26000	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.20	ND		ND	N.E.		N.E.	
Carbon tetrachloride	56-23-5	153.80	ND		ND	0.470		2.00	
n-Heptane	142-82-5	100.20	1.4		5.8	N.E.		N.E.	
1,2-Dichloroethane	107-06-2	98.96	ND		ND	0.110		0.470	
Benzene	71-43-2	78.11	ND		ND	0.360		1.60	
Trichloroethene	79-01-6	131.40	ND		ND	0.480		3.00	
1,2-Dichloropropane	78-87-5	113.00	ND		ND	0.280		1.20	
Methyl Methacrylate	80-62-6	100.12	ND		ND	730		3100	
Bromodichloromethane	75-27-4	163.80	ND		ND	0.0760		0.330	
1,4-Dioxane	123-91-1	88.12	ND		ND	0.560		2.50	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.20	ND		ND	3100		13000	



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Ahera Consultants, Inc.
PO Box 385
Oceanville, NJ 08231-0385

Phone: **609-652-1833**
 Fax: **609-652-1140**
 Date Collected: **9/1/2017**
 Date Received: **9/1/2017**

Project: **Pinelands HS** Sample ID: **Auditorium / Hallway**

Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

USEPA Generic Air Screening Level Summary Table

Target Compounds	CAS#	MW	Result ppbv	Q	Result ug/m3	Residential ug/m3	>	Industrial ug/m3	>
cis-1,3-Dichloropropene**	10061-01-5	111.00	ND		ND	N.E.		N.E.	
Toluene	108-88-3	92.14	7.1		27	5200		22000	
trans-1,3-Dichloropropene**	10061-02-6	111.00	ND		ND	N.E.		N.E.	
1,1,2-Trichloroethane	79-00-5	133.40	ND		ND	0.180		0.770	
2-Hexanone(MBK)	591-78-6	100.10	ND		ND	31.0		130	
Tetrachloroethene	127-18-4	165.80	ND		ND	11.0		47.0	
Dibromochloromethane	124-48-1	208.30	ND		ND	N.E.		N.E.	
1,2-Dibromoethane	106-93-4	187.80	ND		ND	0.00470		0.0200	
Chlorobenzene	108-90-7	112.60	ND		ND	52.0		220	
Ethylbenzene	100-41-4	106.20	0.71		3.1	1.10		4.90	
Xylene (p,m)	1330-20-7	106.20	3.2		14	100		440	
Xylene (Ortho)	95-47-6	106.20	1.6		6.8	100		440	
Styrene	100-42-5	104.10	ND		ND	1000		4400	
Isopropylbenzene (cumene)	98-82-8	120.19	0.77		3.8	420		1800	
Bromoform	75-25-2	252.80	ND		ND	2.60		11.0	
1,1,2,2-Tetrachloroethane	79-34-5	167.90	ND		ND	0.0480		0.210	
4-Ethyltoluene	622-96-8	120.20	10		51	N.E.		N.E.	
1,3,5-Trimethylbenzene	108-67-8	120.20	5.6		28	N.E.		N.E.	
2-Chlorotoluene	95-49-8	126.60	ND		ND	N.E.		N.E.	
1,2,4-Trimethylbenzene	95-63-6	120.20	9.9		48	7.30		31.0	
1,3-Dichlorobenzene	541-73-1	147.00	ND		ND	N.E.		N.E.	
1,4-Dichlorobenzene	106-46-7	147.00	ND		ND	0.260		1.10	
Benzyl chloride	100-44-7	126.00	ND		ND	0.0570		0.250	
1,2-Dichlorobenzene	95-50-1	147.00	ND		ND	210		880	
1,2,4-Trichlorobenzene	120-82-1	181.50	ND		ND	2.10		8.80	
Hexachloro-1,3-butadiene	87-68-3	260.80	ND		ND	0.130		0.560	
Naphthalene	91-20-3	128.17	ND		ND	0.0830		0.360	

**The concentrations of each isomer should be added if multiple isomers are present and compared to the total screening level.

The > column is used to flag exceedences as marked

Exposure Limit Definitions

RSL= Regional Screening Level (Target Hazard Quotient (THQ) =0.1 if available, otherwise THQ = 1)

Agency Definitions

United States Environmental Protection Agency

Reference

EPA Regional Screening Levels (RSLs), May 2016

Compound Exposure Definitions

NE= No Limit Established
 LFC= Lowest Feasible Concentration
 NS= No Screening Value

Regional Screening Level Definition

Target Hazard Quotients (THQ)=0.1 is used for screening when multiple contaminants of concern are



NJDEP Certification #: 03036



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EMSL Order #: **491700897**
 EMSL Sample #: **491700897-1**
 Customer ID: **AHER50**
 Customer PO: **Not Available**

Attn: **Domenic D'Errico**
Ahera Consultants, Inc.
PO Box 385
Oceanville, NJ 08231-0385

Phone: **609-652-1833**
 Fax: **609-652-1140**
 Date Collected: **9/1/2017**
 Date Received: **9/1/2017**

Project: **Pinelands HS** Sample ID: **Auditorium / Hallway**

<u>Analysis</u>	<u>Analysis Date</u>	<u>Analyst Init.</u>	<u>Lab File ID</u>	<u>Canister ID</u>	<u>Sample Vol.</u>	<u>Dil. Factor</u>
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

Possible Background Sources of Contaminants

<u>Target Compounds</u>	<u>CAS#</u>	<u>Result ppbv</u>	<u>Q</u>	<u>Result ug/m3</u>	<u>Use and Possible Sources</u>
Ethanol	64-17-5	6.3		12	Hand sanitizers, disinfecting wipes. Personal care products: nail polish, nail polish remover, colognes, perfumes, rubbing alcohol, hair spray. ²
Freon 11(Trichlorofluoromethane)	75-69-4	2.7		15	Refrigerant from air conditioners, freezers, refrigerators, dehumidifiers. ²
Isopropyl alcohol(2-Propanol)	67-63-0	1.4		3.5	Eye Glass Cleaners. Disinfecting wipes. Personal care products: nail polish, nail polish remover, colognes, perfumes, rubbing alcohol, hair spray. ²
Acetone	67-64-1	4.1		10	Rubber cement, cleaning fluids, scented candles and nail polish remover. ¹
n-Hexane	110-54-3	55	D	190	Gasoline, rubber cement, typing correction fluid and aerosols in perfumes. ¹
Ethyl acetate	141-78-6	0.54		1.9	Personal care products: nail polish, nail polish remover, colognes, perfumes, rubbing alcohol, hair spray. ²
Cyclohexane	110-82-7	26		91	Cyclohexane can be added to lacquers and resins, paint and varnish removers, and fungicides. It is also used as a fuel for camp stoves. Exposure can also occur when people use products that contain cyclohexane or when they smoke cigarettes. ⁴
n-Heptane	142-82-5	1.4		5.8	It is used as an industrial solvent and in gasoline and petroleum products refining processes. Also may be in nail polishes and wood office furniture. ¹
Toluene	108-88-3	7.1		27	Toluene is produced in the process of making gasoline and other fuels from crude oil and making coke from coal. Will occur in gasoline exhaust. Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes. ⁴
Ethylbenzene	100-41-4	0.71		3.1	It is found in natural products such as coal tar and petroleum and is also found in manufactured products such as inks, insecticides, and paints. Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals. ⁴
Xylene (p,m)	1330-20-7	3.2		14	It occurs naturally in petroleum and coal tar. Chemical industries produce xylene from petroleum. Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline. ⁴ Water sealer, gasoline, automobile exhaust, markers, paint, floor polish and cigarette smoke. ¹
Xylene (Ortho)	95-47-6	1.6		6.8	It occurs naturally in petroleum and coal tar. Chemical industries produce xylene from petroleum. Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline. ⁴ Water sealer, gasoline, automobile exhaust, markers, paint, floor polish and cigarette smoke. ¹
Isopropylbenzene (cumene)	98-82-8	0.77		3.8	Used as a thinner for paints, lacquers, and enamels and as a component of high octane fuels. ³

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EMSL Order #: **491700897**
 EMSL Sample #: **491700897-1**
 Customer ID: **AHER50**
 Customer PO: **Not Available**

Attn: **Domenic D'Errico** Phone: **609-652-1833**
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PO Box 385 Date Collected: **9/1/2017**
Oceanville, NJ 08231-0385 Date Received: **9/1/2017**

Project: **Pinelands HS** Sample ID: **Auditorium / Hallway**

<u>Analysis</u>	<u>Analysis Date</u>	<u>Analyst Init.</u>	<u>Lab File ID</u>	<u>Canister ID</u>	<u>Sample Vol.</u>	<u>Dil. Factor</u>
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

Possible Background Sources of Contaminants

Target Compounds	CAS#	Result ppbv	Q	Result ug/m3	Use and Possible Sources
4-Ethyltoluene	622-96-8	10		51	Used in commercial products, building products, or wood office furnishings. Flat water thinned interior paints and tinting bases. Scatter rugs, bathmats, and sets. ¹¹
1,3,5-Trimethylbenzene	108-67-8	5.6		28	1,3,5-Trimethylbenzene is used in dyes, solvents, paint thinners and plastics. 1,3,5-Trimethylbenzene is emitted into the air by emissions from gasoline-powered vehicles, waste treatment plants and coal-fired power stations.
1,2,4-Trimethylbenzene	95-63-6	9.9		48	Occurs in petroleum and coal tar. ¹⁰ Gasoline additive and automobile exhaust. ¹

Qualifier Definitions**ND = Non Detect**

B = Compound also found in method blank.

E= Estimated concentration exceeding upper calibration range.

D= Result reported from diluted analysis.

Sources References

- (1) NJDEP "Common Household Sources of Background Indoor Air Contamination". June 26, 2012
- (2) NYSDOH "Volatile Organic Compounds (VOCs) in Commonly Used Products", 2007
- (3) EPA, Air & Radiation, TTN Web - Technology Transfer Network/Air Toxics Web site, various years.
- (4) Agency for Toxic Substances and Disease Registry (ATSDR). U.S. Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA. 1998.
- (5) OFFICE OF POLLUTION PREVENTION AND TOXICS, U.S. ENVIRONMENTAL PROTECTION AGENCY, August 1994, EPA 749-F-94-012a
- (6) U.S. Environmental Protection Agency, Office of Research and Development, Cincinnati, OH. 1985.
- (7) World Health Organization,
- (8) Product Safety Assessment, Revised: November 19, 2010 The Dow Chemical Company
- (9) California Office of Environmental Health Hazard Assessment, PROPOSED ACTION LEVEL FOR 2-CHLOROTOLUENE
- (10) Delaware Health and Social Services, Division of Public Health, Revised: 01/2010
- (11) USEPA, Envirofacts Master Chemical Integrator (EMCI), Scorecard, 4/10/2009

**NJDEP Certification #: 03036**



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EMSL Order #: **491700897**
 EMSL Sample #: **491700897-1**
 Customer ID: **AHER50**
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Attn: **Domenic D'Errico**
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Phone: **609-652-1833**
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 Date Collected: **9/1/2017**
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Project: **Pinelands HS**

Sample ID: **Auditorium / Hallway**

Analysis	Analysis Date	Analyst Init.	Lab File ID	Canister ID	Sample Vol.	Dil. Factor
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

NIOSH and OSHA Exposure Limit Comparisons

Target Compounds	CAS#	MW	Result ppbv	Q	Result mg/m3	Result ug/m3	g/n	OSHA PEL ug/m3	>
Propylene	115-07-1	42.08	ND		ND	ND	ND	N.E.	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.90	ND		ND	ND	ND	4900000	
Freon 114(1,2-Dichlorotetrafluoroethan	76-14-2	170.90	ND		ND	ND	ND	7000000	
Chloromethane	74-87-3	50.49	ND		ND	ND	ND	210000	
n-Butane	106-97-8	58.12	ND		ND	ND	ND	1900000	
Vinyl chloride	75-01-4	62.50	ND		ND	ND	ND	2600	
1,3-Butadiene	106-99-0	54.09	ND		ND	ND	ND	2200	
Bromomethane	74-83-9	94.94	ND		ND	ND	ND	78000	
Chloroethane	75-00-3	64.52	ND		ND	ND	ND	2600000	
Ethanol	64-17-5	46.07	6.3		0.012	12	.01	1900000	
Bromoethene(Vinyl bromide)	593-60-2	106.90	ND		ND	ND	ND	N.E.	
Freon 11(Trichlorofluoromethane)	75-69-4	137.40	2.7		0.015	15	.01	5600000	
Isopropyl alcohol(2-Propanol)	67-63-0	60.10	1.4		0.0035	3.5	.00	980000	
Freon 113(1,1,2-Trichlorotrifluoroethan	76-13-1	187.40	ND		ND	ND	ND	7700000	
Acetone	67-64-1	58.08	4.1		0.010	10	.01	2400000	
1,1-Dichloroethene	75-35-4	96.94	ND		ND	ND	ND	790000	
Acetonitrile	75-05-8	41.00	ND		ND	ND	ND	67000	
Tertiary butyl alcohol(TBA)	75-65-0	74.12	ND		ND	ND	ND	300000	
Bromoethane(Ethyl bromide)	74-96-4	108.00	ND		ND	ND	ND	880000	
3-Chloropropene(Allyl chloride)	107-05-1	76.53	ND		ND	ND	ND	3100	
Carbon disulfide	75-15-0	76.14	ND		ND	ND	ND	62000	
Methylene chloride	75-09-2	84.94	ND		ND	ND	ND	87000	
Acrylonitrile	107-13-1	53.00	ND		ND	ND	ND	4300	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.15	ND		ND	ND	ND	N.E.	
trans-1,2-Dichloroethene	156-60-5	96.94	ND		ND	ND	ND	790000	
n-Hexane	110-54-3	86.17	55	D	0.19	190	.1	1800000	
1,1-Dichloroethane	75-34-3	98.96	ND		ND	ND	ND	400000	
Vinyl acetate	108-05-4	86.00	ND		ND	ND	ND	N.E.	
2-Butanone(MEK)	78-93-3	72.10	ND		ND	ND	ND	590000	
cis-1,2-Dichloroethene	156-59-2	96.94	ND		ND	ND	ND	790000	
Ethyl acetate	141-78-6	88.10	0.54		0.0019	1.9	.00	1400000	
Chloroform	67-66-3	119.40	ND		ND	ND	ND	240000	
Tetrahydrofuran	109-99-9	72.11	ND		ND	ND	ND	590000	
1,1,1-Trichloroethane	71-55-6	133.40	ND		ND	ND	ND	1900000	
Cyclohexane	110-82-7	84.16	26		0.091	91	.09	1000000	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.20	ND		ND	ND	ND	N.E.	
Carbon tetrachloride	56-23-5	153.80	ND		ND	ND	ND	63000	
n-Heptane	142-82-5	100.20	1.4		0.0058	5.8	.00	2000000	
1,2-Dichloroethane	107-06-2	98.96	ND		ND	ND	ND	200000	
Benzene	71-43-2	78.11	ND		ND	ND	ND	3200	
Trichloroethene	79-01-6	131.40	ND		ND	ND	ND	540000	
1,2-Dichloropropane	78-87-5	113.00	ND		ND	ND	ND	350000	
Methyl Methacrylate	80-62-6	100.12	ND		ND	ND	ND	410000	
Bromodichloromethane	75-27-4	163.80	ND		ND	ND	ND	N.E.	
1,4-Dioxane	123-91-1	88.12	ND		ND	ND	ND	360000	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.20	ND		ND	ND	ND	410000	

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<u>Analysis</u>	<u>Analysis Date</u>	<u>Analyst Init.</u>	<u>Lab File ID</u>	<u>Canister ID</u>	<u>Sample Vol.</u>	<u>Dil. Factor</u>
Initial	09/01/2017	TP	J1817.D	E0566	250 cc	1
Dilution1	09/02/2017	TP	J1819.D	E0566	25 cc	10

NIOSH and OSHA Exposure Limit Comparisons

Target Compounds	CAS#	MW	Result ppbv	Q	Result mg/m3	Result ug/m3	g/n	OSHA PEL ug/m3	>
cis-1,3-Dichloropropene**	10061-01-5	111.00	ND		ND	ND	ND	N.E.	
Toluene	108-88-3	92.14	7.1		0.027	27	.02	750000	
trans-1,3-Dichloropropene**	10061-02-6	111.00	ND		ND	ND	ND	N.E.	
1,1,2-Trichloroethane	79-00-5	133.40	ND		ND	ND	ND	55000	
2-Hexanone(MBK)	591-78-6	100.10	ND		ND	ND	ND	410000	
Tetrachloroethene	127-18-4	165.80	ND		ND	ND	ND	680000	
Dibromochloromethane	124-48-1	208.30	ND		ND	ND	ND	N.E.	
1,2-Dibromoethane	106-93-4	187.80	ND		ND	ND	ND	150000	
Chlorobenzene	108-90-7	112.60	ND		ND	ND	ND	350000	
Ethylbenzene	100-41-4	106.20	0.71		0.0031	3.1	.00	430000	
Xylene (p,m)	1330-20-7	106.20	3.2		0.014	14	.01	430000	
Xylene (Ortho)	95-47-6	106.20	1.6		0.0068	6.8	.00	430000	
Styrene	100-42-5	104.10	ND		ND	ND	ND	430000	
Isopropylbenzene (cumene)	98-82-8	120.19	0.77		0.0038	3.8	.00	250000	
Bromoform	75-25-2	252.80	ND		ND	ND	ND	5200	
1,1,2,2-Tetrachloroethane	79-34-5	167.90	ND		ND	ND	ND	34000	
4-Ethyltoluene	622-96-8	120.20	10		0.051	51	.05	N.E.	
1,3,5-Trimethylbenzene	108-67-8	120.20	5.6		0.028	28	.02	120000	
2-Chlorotoluene	95-49-8	126.60	ND		ND	ND	ND	N.E.	
1,2,4-Trimethylbenzene	95-63-6	120.20	9.9		0.048	48	.04	120000	
1,3-Dichlorobenzene	541-73-1	147.00	ND		ND	ND	ND	N.E.	
1,4-Dichlorobenzene	106-46-7	147.00	ND		ND	ND	ND	450000	
Benzyl chloride	100-44-7	126.00	ND		ND	ND	ND	5200	
1,2-Dichlorobenzene	95-50-1	147.00	ND		ND	ND	ND	300000	
1,2,4-Trichlorobenzene	120-82-1	181.50	ND		ND	ND	ND	N.E.	
Hexachloro-1,3-butadiene	87-68-3	260.80	ND		ND	ND	ND	N.E.	
Naphthalene	91-20-3	128.17	ND		ND	ND	ND	52000	

**The concentrations of each isomer should be added if multiple isomers are present and compared to the total screening level.

The > column is used to flag exceedences as marked

Exposure Limit Definitions

REL= Recommended Exposure Limit, PEL= Permissible Exposure Limit

Agency Definitions

NIOSH= The National Institute for Occupational Safety and Health

Reference

Occupational Safety and Health Administration (OSHA) General Industry Air Contaminants Standard (29 CFR 1910.1000)

Compound Exposure Definitions

NE= No Limit Established

LFC= Lowest Feasible Concentration

NS= No Screening Value



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