Indoor Air Quality Report of Findings

Prepared for:

Central York School District

775 Marion Road

York, PA 17406

August 14, 2019

Attn: Matt Shields

Prepared by:

Airborne Contamination Identification Associates, Ltd.

Randall R. Leaman

"A Certified Indoor Air Quality Professional"

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ACIA
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Data Collected

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* Dates Sampled: August 07 & 08, 2019
* Samples Collected by: Kyle B. Leaman
* Sample Location: All Central York School District Buildings
* Equipment Used: Met One Model GT-526S Particle Counter Bio Test RCS Portable bio-aerosol Sampler. Vulcain SafetyPalm.

Guidelines for Evaluation of Airborne Microbial Contamination of Buildings

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IAQ Evaluation	Category of Contamination	Bacteria CFU's/m3	FUNGI CFU's/m3
Excellent	Very Low	<100	<50
Good	Low	<500	<200
Marginal	Intermediate	<2,500	<1,000
Poor	High	<10,000	<10,000
Very Poor	Very High	>10,000	>10,000

By Brian Flanigan, PhD (Citing Wanner, et al, 1993) as presented to the International Conference on Fungi and Bacteria in Indoor Air Environments – Health Effects, Detection and Remediation; October 6-7, 1994

Table: Levels of Microbial Contamination of air and dust in naturally ventilated homes and non-industrial indoor work environments.

American Industrial Hygiene Association (AIHA), *The Synergist*, Geoffery Clark, *The Synergist*, 2001, updated 2003, and Godish 2001 (section).

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Type	Normal Background*	Possible	Probable
Air Samples from Residential Buildings	<500 cfu/m^3	500-1,000 cfu/m^3	>1,000 cfu/m^3
Air Samples from Commercial Buildings (filtered HVAC system	<250 cfu/m^3	250-1,000 cfu/m^3	>1,000 cfu/m^3
Bulk Samples	<10,000 cfu/g	10,000-100,000 cfu/g	>100,000 cfu/g
Swab Samples	<10,000 cfu/in^2 <1,500 cfu/cm^2		>10,000 cfu/in^2 >1,500 cfu/in^2
Tape Samples	NSFM, NSFC 1-5% <10,000 spores/in^2	5-25%	25-100% >10,000 spores/in^2

The table list mold spore levels considered to be a normal background, possible contamination, and probable contamination for a variety of sample collection methods.

- Types and relative proportions of fungal spores should be similar to outdoors.
- NSFM = no significant fungal material
- NSFC = no significant fungal contamination
- Cfu/m^3 = colony forming units per cubic meter
- Cfu/g = colony forming units per gram of dust or material
- Cfu/in^2 = colony forming units per square inch of surface

" Worldwide Exposure Standards for Mold and Bacteria"
By Robert C. Brandys, PhD, MPH, PE,CIH, CSP,CMR
Gail M. Brandys, MS, CSP, CMR

Data Collected North Hills

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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Room 11	760	180	30	51%	72ºF	0/466	Excellent	50
2- Room 6	470	60	30	47%	71ºF	0/444	Very Good	75
3- Library	450	80	40	46%	71ºF	0/485	Good	188
4- Room 26	400	60	20	45%	71ºF	0/521	Excellent	12
5- Room 20	470	90	40	52%	72ºF	0/446	Excellent	12
6- Room 110	930	330	100	43%	72ºF	0/506	Very Good	100
7- Room 104	620	80	30	52%	71ºF	0/451	Very Good	62
8- Guidance	670	90	30	67%	71ºF	0/457	Excellent	12

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected North Hills

ACIA
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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Room 17	360	50	10	57%	71ºF	0/474	Very Good	62
Outside Air –ESC	5,170	550	10	76%	72ºF	0/444	N/A	261

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Hayshire

ACIA
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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Guidance	560	190	60	39%	72ºF	0/430	Very Good	74
2- Room 303	50	0	0	42%	71ºF	0/408	Excellent	38
3- Room 206	70	10	10	50%	71ºF	0/415	Excellent	0
4- Library	680	220	60	61%	71ºF	0/439	Very Good	74
5- Room 003	30	20	10	51%	70ºF	0/394	Excellent	38
6- Room 506	150	50	10	62%	70ºF	0/402	Excellent	37
7- Room 105	250	70	10	51%	71ºF	0/438	Excellent	12
8- Room 108	440	80	10	58%	71ºF	0/390	Excellent	12

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Hayshire

ACIA
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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Music	2,860	930	420	59%	71ºF	0/408	Very Good	100
Outside Air –ESC	5,170	550	10	76%	72ºF	0/444	N/A	261

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Middle School

ACIA
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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Guidance	950	250	80	55%	70ºF	0/548	Excellent	37
2- Room 8	460	10	0	50%	69ºF	0/444	Excellent	50
3- Room 22	880	120	20	51%	70ºF	0/446	Excellent	50
4- Room 30	480	40	0	53%	69ºF	0/458	Excellent	37
5- Room 41	340	50	10	49%	69ºF	0/433	Excellent	25
6- Room 45	660	110	30	53%	70ºF	0/437	Excellent	12
7- Room 50	370	10	10	51%	70ºF	0/503	Excellent	0
8- Room 56	1,170	240	50	59%	69ºF	0/471	Very Good	62

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Middle School

ACIA
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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Room 65	730	90	10	53%	69ºF	0/471	Excellent	37
10- Library	530	100	50	53%	70ºF	0/453	Very Good	62
11- Aux Gym	130	0	0	58%	70ºF	0/701	Excellent	0
12- Room 78	680	100	0	60%	70ºF	0/438	Excellent	50
Outside Air –ESC	5,170	550	10	76%	72ºF	0/444	N/A	261

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Stony Brook

ACIA
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Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Music	3,240	1,010	410	44%	74ºF	0/896	Good	163
2- Library	90	20	10	44%	72ºF	0/459	Excellent	38
3- Guidance	4,840	1,300	380	58%	71ºF	0/492	Very Good	88
4- Room 007	320	60	0	43%	72ºF	0/483	Excellent	25
5- Room 004	110	20	0	47%	72ºF	0/470	Excellent	12
6- Room 103	160	10	0	42%	72ºF	0/451	Excellent	0
7- Room 201	280	30	10	43%	72ºF	0/582	Very Good	62
8- Room 205	100	10	0	41%	72ºF	0/205	Excellent	12

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Stony Brook

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Room 306	230	30	0	45%	72ºF	0/557	Excellent	12
Outside Air –ESC	5,170	550	10	76%	72ºF	0/444	N/A	261

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected ESC

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Board Room	1,010	200	60	55%	67ºF	0/464	Excellent	38
2- Business Office	1,480	400	90	70%	68ºF	0/499	Very Good	63
3- Hallway	1,130	290	70	56%	70ºF	0/552	Very Good	62
4- Human Resources	550	30	20	62%	70ºF	0/538	Very Good	74
5- Outside Air	5,170	550	10	76%	72ºF	0/444	N/A	261

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Sinking Springs

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Library	440	120	50	65%	73ºF	0/516	Very Good	62
2- Room 228	240	30	0	61%	73ºF	0/429	Very Good	88
3- Room 127	70	20	20	58%	73ºF	0/528	Excellent	36
4- Room 124	260	50	20	62%	73ºF	0/416	Good	112
5- Room 103	250	30	10	62%	73ºF	0/439	Very Good	74
6- Room 207	210	10	0	62	73ºF	0/422	Excellent	50
7- Room 202	270	30	10	61%	73ºF	0/436	Excellent	24
8- Art	220	40	0	66%	73ºF	0/419	Excellent	25

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Sinking Springs

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Café	530	130	30	61%	73ºF	0/448	Good	200
Outside Air – Farmhouse	10,520	1,230	190	85%	69ºF	0/547	N/A	337

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Roundtown

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Room 102	160	10	0	62%	73ºF	0/450	Excellent	24
2- Room 108	2,570	850	450	58%	72ºF	0/1,253	Very Good	87
3- Library	130	10	0	66%	72ºF	0/429	Excellent	12
4- Room 206	120	30	0	75%	71ºF	0/460	Very Good	62
5- Room201	250	30	10	76%	72ºF	0/453	Excellent	49
6- Art Room 408	1,620	400	130	68%	73ºF	0/531	Very Good	87
7- Room 306	420	100	0	53%	71ºF	0/418	Excellent	12
8- Room 001	190	30	0	53%	71ºF	0/438	Excellent	12

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Roundtown

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Room 418	390	160	80	48%	71ºF	0/418	Good	124
Outside Air – Farmhouse	10,520	1,230	190	85%	69ºF	0/547	N/A	337

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Farmhouse & High School

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
1- Farmhouse 1st Floor	3,430	730	140	67%	68ºF	0/682	Good	225
2- Farmhouse 2nd Floor	710	50	20	63%	69ºF	0/536	Very Good	88
3- Outside Air	10,520	1,230	190	85%	69ºF	0/547	N/A	337
4- Office	2,540	670	150	69%	71ºF	0/611	Very Good	86
5- Wrestling Room	520	180	70	68%	71ºF	0/471	Good	150
6- Gym	680	80	30	74%	71ºF	0/462	Very Good	74
7- Library	630	320	140	54%	70ºF	0/456	Excellent	25
8- Room 639	140	30	10	76%	71ºF	0/476	Excellent	25

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Farmhouse & High School

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
9- Room 621	250	40	20	62%	72ºF	0/482	Excellent	25
10- Room 547	100	70	40	65%	73ºF	0/439	Excellent	0
11- Room 533	60	20	20	62%	74ºF	0/426	Excellent	0
12- Room 424	80	0	0	73%	73ºF	0/444	Excellent	38
13- Career Center	180	110	40	61%	73ºF	0/480	Excellent	0
14- Guidance Room 108	440	110	40	62%	73ºF	0/497	Excellent	12
15- Boy's Locker Room	580	70	0	71%	72ºF	0/464	Very Good	75
16- Café	980	70	20	63%	72ºF	0/449	Very Good	87

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Data Collected Farmhouse & High School

ACIA
Airborne Contamination Identification Associates Ltd.

Location	2.5 Micron	5.0 Micron	10.0 Micron	RH%	Temp ºF	Co/Co²	Evaluation	Fungi CFU M³
17- 400 Wing Common Area	290	60	10	63%	72ºF	0/483	Excellent	12
18- Room 502 15-107	250	10	10	68%	72ºF	0/431	Good	200
19- Room 514	330	60	30	67%	73ºF	0/544	Excellent	12
20- Room 609	270	30	0	69%	73ºF	0/434	Very Good	100
21- Room 153 Office Area	810	150	100	71%	73ºF	0/477	Very Good	88
22- Choral Room	140	40	20	66%	73ºF	0/471	Very Good	87

NOTES: Above particle counts are pieces per cubic foot of air. The fungi counts are in colony forming units per cubic meter of air. Locations with carbon dioxide levels above 2,000 parts per million should the ventilation checked to ensure proper amount of outside air is being introduced.

Air Quality Score Card

ACIA
Airborne Contamination Identification Associates Ltd.

Location	Excellent	Very Good	Good	Normal	Marginal	Poor	Very Poor
Farmhouse		1	1				
High School	10	7	2				
Stony Brook	6	2	1				
Middle School	10	2					
Hayshire	7	2					
ESC	1	3					
Roundtown	5	3	1				
North Hills	4	4	1				
Sinking Springs	4	3	2				
District Totals							

Recommendations

Based on the samples taken on August 7th and 8th, Airborne Contamination Identification Associates Ltd is pleased to announce that there are no recommendations to be made at this time. Over the past two previous years the outside air averaged 369 cfu's/m^3 and 357 cfu's/m^3 however, this year outside air was unusually low with an average of 299 cfu's/m^3. Due to outside air being so low at the time of sampling ACIA is able to give a good evaluation at this time.

Regards,
Randall R. Leaman C.I.A.Q.P
Certified Indoor Air Quality Professional since 1996

Airborne Contamination Identification Associates Ltd.