



airPHX Companies  
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McLean, VA 22101

May 26, 2020

## Pre and In-Treatment Air and Surface Report – [REDACTED], [REDACTED], [REDACTED]

### A. Summary – Air Samples

Pre and in-treatment air samples results given below.

Sample Date	Treatment	Number of samples	Location	Average (cfu/m <sup>3</sup> )	Range	Standard Deviation	% Reduction
04/18/2020	Pre	10	Lobby	506	267/833	190.4	-
05/05/2020	In			<b>33</b>	<b>0/67</b>	<b>27.2</b>	<b>93.5</b>
04/18/2020	Pre	2	Café - halo	333	300/367	33.3	-
05/05/2020	In			<b>83</b>	<b>67/100</b>	<b>16.7</b>	<b>75.1</b>
04/18/2020	Pre	4	2 <sup>nd</sup> Floor - halo	217	167/267	37.3	-
05/05/2020	In			<b>42</b>	<b>33/67</b>	<b>14.4</b>	<b>80.7</b>
04/18/2020	Pre	4	Exterior	2,150	1,933/2,333	150.0	-
05/05/2020	In			<b>2,158</b>	<b>2,067/2,200</b>	<b>54.6</b>	<b>+ 0.4</b>

### Background

All air samples were taken via the MB-1 air sampler, 30 liters per sample throughout the various locations given above with results normalized to colony forming units per cubic meter of air (cfu/m<sup>3</sup>).

Given below are airborne organisms found in for the **pre-treatment** sampling, excluding the outside samples.

Species	Raw Count	Species	Raw Count
<i>Penicillium, aspergillus types</i>	1,350	<i>Ulocladium chartarum</i>	815
<i>Aspergillus fumigatus</i>	1,295	<i>Penicillium brevicompactum</i>	750
<i>Cladosporium sphaerospermum</i>	1,105	<i>Absidia spp</i>	685
<i>Penicillium purpurogenum</i>	1,055	<i>Firmicutes spp</i>	545

Noted below are airborne organisms found for this **in-treatment** sampling, excluding the outside samples.

Species	Raw Count	Species	Raw Count
<i>Penicillium, aspergillus types</i>	365	<i>Ulocladium chartarum</i>	< 5
<i>Aspergillus fumigatus</i>	255	<i>Penicillium brevicompactum</i>	< 5
<i>Cladosporium sphaerospermum</i>	113	<i>Absidia spp</i>	< 5
<i>Penicillium purpurogenum</i>	< 5	<i>Firmicutes spp</i>	< 5

04/18/2020 - Pre-treatment bioburden in the above locations are > 300 cfu/m<sup>3</sup> which is not acceptable and needs corrective action.

**05/05/2020** - In-treatment results show a **93.5% decrease** in the **Lobby** which is now < 100 cfu/m<sup>3</sup> and considered **clean and acceptable**

- The **Cafe** and **2<sup>nd</sup> Floor** samples are out of the direct airPHX treatment area and have seen a “halo effect” showing a **75.1%** and **80.7% reduction**, respectively.

### Observations

The exterior air samples ranged from **1,933** to **2,333 cfu/m<sup>3</sup>** and reveal that most of the bioburden continues to come from the outside air. The airPHX unit is having a noticeable impact on reducing the bioburden.



## Target Air Quality

Air quality scale for workplaces, public buildings, schools, and homes are as follows:

- $< 100 \text{ cfu/m}^3$  is considered **clean and acceptable**.
- $100$  to  $300 \text{ cfu/m}^3$  is **marginal**.
- $> 300 \text{ cfu/m}^3$  is **not acceptable** and needs corrective action.

In most cases, air quality  $< 100 \text{ cfu/m}^3$  has shown a decrease in the overall bioburden and odors.

*Although the predominant organisms noted in this report are fungi, previous testing results show bacteria, viruses and protozoa are eliminated as effectively as fungi. The reactive oxygen species (ROS) generated is effective on gram +, gram – bacteria, protozoa, spores and viruses.*

## B. Summary – Surface Contact Swabs

Pre and in-treatment surface (swab) samples results given below.

Sample Date	Treatment	Number of samples	Location	Average (cfu/cm <sup>2</sup> )	Range	Standard Deviation	% Reduction
04/18/2020	Pre	8	Various	32.0	12.5/47.5	10.4	-
05/05/2020	In	8		<b>2.2</b>	<b>1.0/3.8</b>	<b>0.8</b>	<b>93.1</b>
04/18/2020	Pre	1	Neg. Control	0	0/0	-	-
05/05/2020	In			0	0/0	-	-

04/18/2020 - Pre-treatment contact swab results from the various locations are noticeably  $> 10 \text{ cfu/cm}^2$  which is not acceptable and needs corrective action.

**05/05/2020 - In-treatment** results show a **93.1% reduction** and now is  $< 5 \text{ cfu/cm}^2$  which is **clean and acceptable**, per the Target Contact Surface Quality guide.

## Target Contact Surface Quality

Contact surface quality scale for workplaces, public buildings, schools, and homes are as follows:

- $< 5 \text{ cfu/cm}^2$  is considered **clean and acceptable**.
- $5$  to  $10 \text{ cfu/cm}^2$  is considered **marginal**.
- $> 10 \text{ cfu/cm}^2$  is considered **not acceptable** and needs corrective action.

In most cases, surface swabs  $< 5 \text{ cfu/cm}^2$  has shown a decrease in the overall bioburden and odors.

Please contact me if there are questions or if further information is needed.

Respectfully submitted,

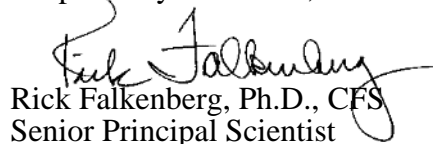
  
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Senior Principal Scientist



Table #1

05/05/2020 In-treatment Air Sample Results - CFU/m<sup>3</sup>

05/05/2020 - Pre-treatment - In-treatment						
Plate Lot No.	Air Sample Location	Air Sample Location	Liters of Air	Raw Count	Corrected Count	CFU/m <sup>3</sup>
1955	Ctrl	Unopened	0	0	0	0
1957	1	Lobby	30	2	2	67
1949	2	Lobby	30	1	1	33
1973	3	Lobby	30	2	2	67
1981	4	Lobby	30	0	0	0
1989	5	Lobby	30	1	1	33
1997	6	Lobby / Board	30	0	0	0
2005	7	Lobby / Board	30	2	2	67
2013	8	Lobby	30	1	1	33
2021	9	Lobby	30	0	0	0
1875	10	Lobby	30	1	1	33
2229	11	Lobby / Front office	30	2	2	67
2237	12	Lobby /	30	0	0	0
2253	13	Café - halo	30	3	3	100
1867	14	Café - halo	30	2	2	67
1891	15	2nd Floor - halo	30	1	1	33
1883	16	2nd Floor - halo	30	1	1	33
1899	17	2nd Floor - halo	30	2	2	67
1907	18	2nd Floor - halo	30	1	1	33
1915	1	Exterior	30	57	66	2,200
1923	2	Exterior	30	57	66	2,200
1931	3	Exterior	30	56	65	2,167
1938	4	Exterior	30	54	62	2,067

Avg	33	High	67
Low	0	SD	27.2
Avg	83	High	100
Low	67	SD	16.7
Avg	42	High	67
Low	33	SD	14.4
Avg	2,158	High	2,200
Low	2,067	SD	54.6

Total Adjusted Raw Count 19  
Total CFU/m<sup>3</sup> 733

Table #1, continued

04/18/2020 Pre-treatment Air Sample Results - CFU/m<sup>3</sup>

04/18/2020 - Pre-treatment						
Plate Lot No.	Air Sample Location	Air Sample Location	Liters of Air	Raw Count	Corrected Count	CFU/m <sup>3</sup>
4012	Ctrl	Unopened	0	0	0	0
4020	1	Lobby	30	15	16	533
4028	2	Lobby	30	13	13	433
3020	3	Lobby	30	22	23	767
3012	4	Lobby	30	12	12	400
3004	5	Lobby	30	8	8	267
2996	6	Lobby / Board	30	10	10	333
3028	7	Lobby / Board	30	15	16	533
3036	8	Lobby	30	24	25	833
3044	9	Lobby	30	21	22	733
3052	10	Lobby	30	18	19	633
3060	11	Lobby / Front office	30	10	10	333
3068	12	Lobby /	30	8	8	267
3958	13	Café - halo	30	11	11	367
3950	14	Café - halo	30	9	9	300
3966	15	2nd Floor - halo	30	11	11	367
3974	16	2nd Floor - halo	30	7	9	300
3982	17	2nd Floor - halo	30	10	10	333
3990	18	2nd Floor - halo	30	8	8	267
3998	1	Exterior	30	55	63	2,100
4006	2	Exterior	30	51	58	1,933
4014	3	Exterior	30	60	70	2,333
4022	4	Exterior	30	58	67	2,233

Avg	506	High	833
Low	267	SD	190.4
Avg	333	High	367
Low	300	SD	33.3
Avg	317	High	367
Low	267	SD	37.3
Avg	2,150	High	2,333
Low	1,933	SD	150.0

Total Adjusted Raw Count 222  
Total CFU/m<sup>3</sup> 8,000



Table #2

05/05/2020 In-treatment Surface Sample Results – CFU/cm<sup>2</sup>

05/05/2020 - Pre-treatment - In-treatment					
Room	Swab Number	Surface Swab Sample Location	10x10x10 cm	Raw Count	CFU/cm <sup>2</sup>
N/A	CTRL	Swab not removed from container	0	0	0
Surface	1	Counter / work station	10x10x10	185	1.9
Surface	2	Crashbar - entry door	10x10x10	375	3.8
Surface	3	Drive-thru counter next to speaker phone	10x10x10	210	2.1
Surface	4	Left arm rest on couch	10x10x10	200	2.0
Surface	5	Desk in office	10x10x10	208	2.1
Surface	6	Board table	10x10x10	305	3.1
Surface	7	Café counter next to microwave	10x10x10	95	1.0
Surface	8	Handle on men's room door	10x10x10	214	2.1

Avg 2.2 Max 3.8  
Min 1.0 SD 0.78

Total Adjusted Raw Count 1,792  
Total CFU/cm<sup>2</sup> 18

Table #2, continued

04/18/2020 Pre-treatment Surface Sample Results – CFU/cm<sup>2</sup>

04/18/2020 - Pre-treatment					
Room	Swab Number	Surface Swab Sample Location	10x10x10 cm	Raw Count	CFU/cm <sup>2</sup>
N/A	CTRL	Swab not removed from container	0	0	0
Surface	1	Counter / work station	10x10x10	2,100	21.0
Surface	2	Crashbar - entry door	10x10x10	4,750	47.5
Surface	3	Drive-thru counter next to speaker phone	10x10x10	3,455	34.6
Surface	4	Left arm rest on couch	10x10x10	3,050	30.5
Surface	5	Desk in office	10x10x10	3,950	39.5
Surface	6	Board table	10x10x10	3,980	39.8
Surface	7	Café counter next to microwave	10x10x10	1,250	12.5
Surface	8	Handle on men's room door	10x10x10	3,100	31.0

Avg 32.0 Max 47.5  
Min 12.5 SD 10.42

Total Adjusted Raw Count 25,635  
Total CFU/cm<sup>2</sup> 256



Table #3

05/05/2020 In-treatment Air Sample Pictures

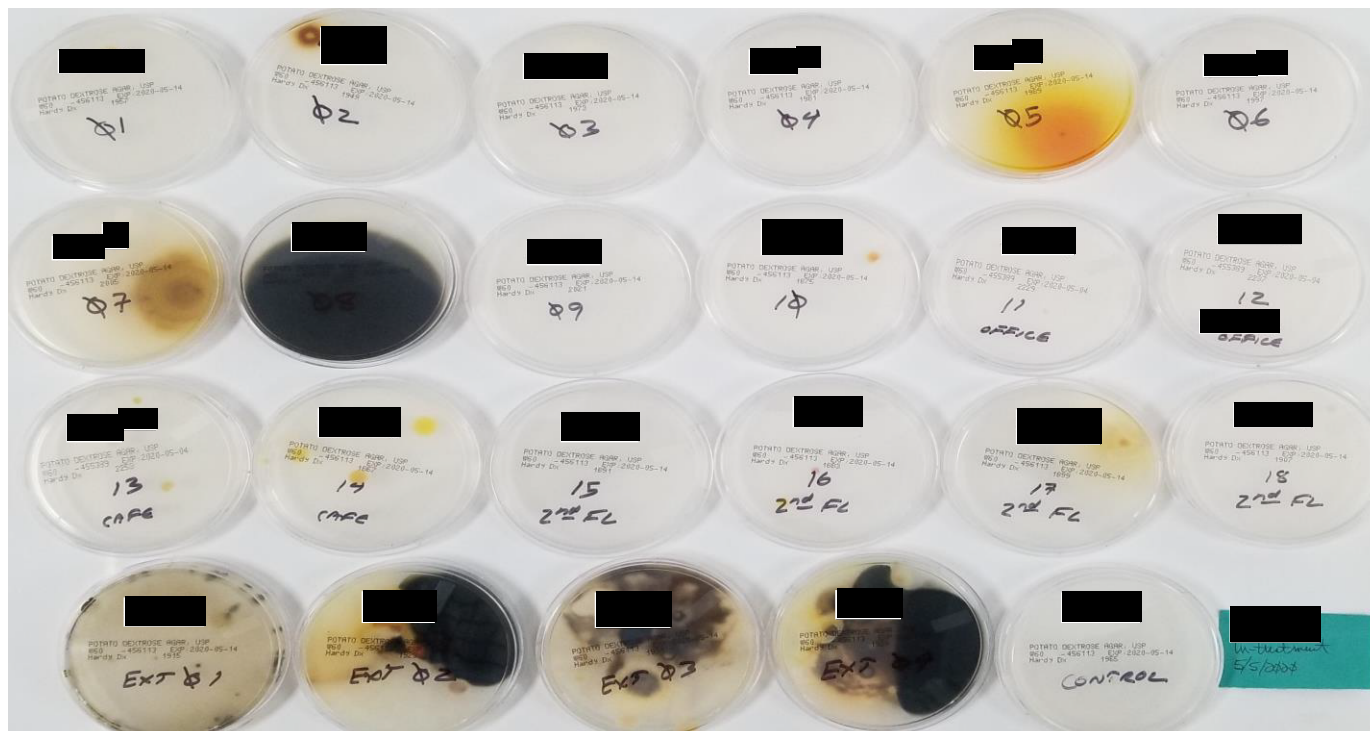


Table #3, continued

04/18/2020 Pre-treatment Air Sample Pictures

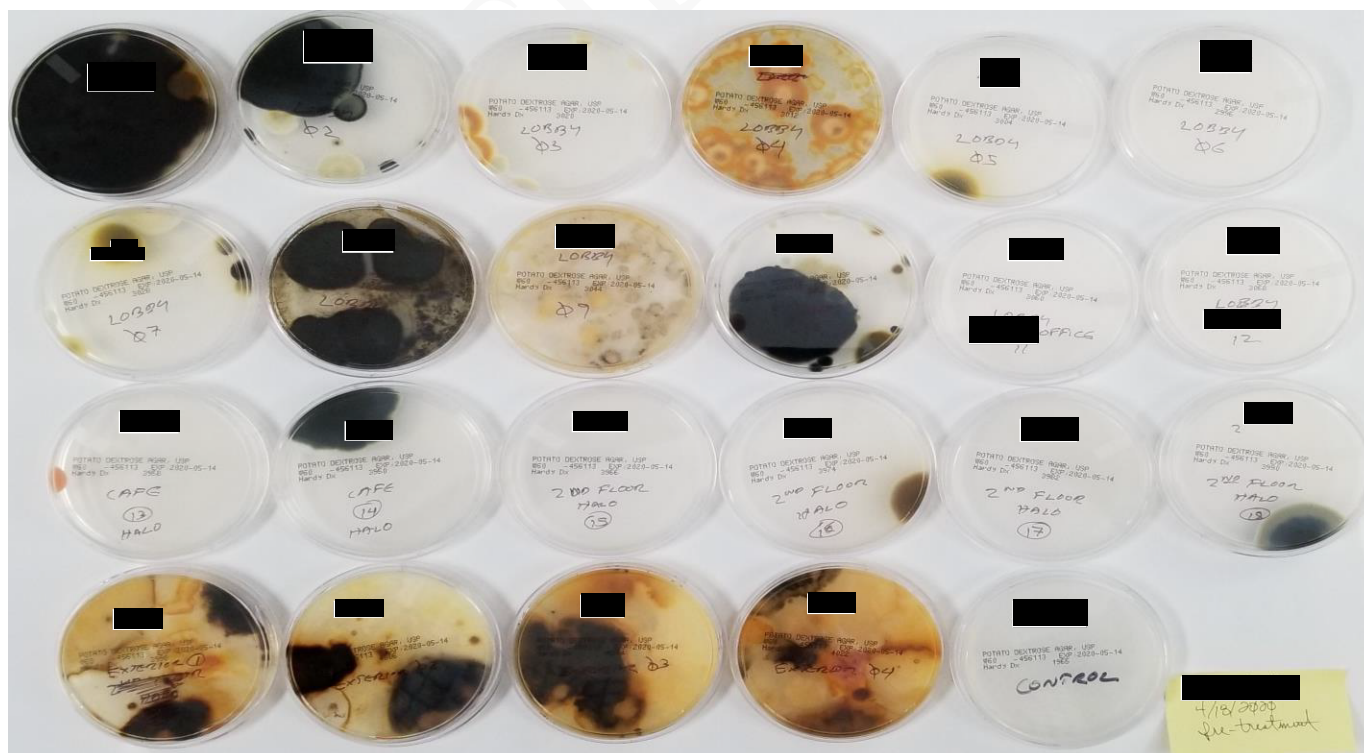






Table #4

05/05/2020 and 04/18/2020 Pre and In-treatment Air and Surface Swab Locations

