



airPHX Companies
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McLean, VA 22101

October 19 2019

Pre and In-Treatment Air and Surface Report – University of [REDACTED] ATR

A. Summary – Air Samples

Pre and in-treatment air samples results given below.

Sample Date	Treatment	Number of samples	Location	Average (cfu/m ³)	Range	Standard Deviation	% Reduction
08/19/19	Pre	11	Various	830	633/1,167	269.0	-
10/07/19	In			152	100/267	55.7	81.7
08/19/19	Pre	4/6	Hall 3rd Floor Nutrition Turf (3)	1,050	767/1,433	251.1	-
10/07/19	In			622	333/933	210.5	40.8
08/19/19	Pre	2	Exterior	2,483	2,300/2,667	183.3	-
10/07/19	In			2,683	2,667/2,700	16.7	+ 7.5

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/m³).

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

Species	Raw Count	Species	Raw Count
<i>Penicillium, aspergillus types</i>	3,850	<i>Ulocladium chartarum</i>	865
<i>Aspergillus fumigatus</i>	2,875	<i>Penicillium brevicompactum</i>	775
<i>Cladosporium sphaerospermum</i>	2,575	<i>Absidia spp</i>	615
<i>Penicillium purpurogenum</i>	1,258	<i>Firmicutes spp</i>	520

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

Species	Raw Count	Species	Raw Count
<i>Penicillium, aspergillus types</i>	1,520	<i>Ulocladium chartarum</i>	425
<i>Aspergillus fumigatus</i>	1,300	<i>Penicillium brevicompactum</i>	335
<i>Cladosporium sphaerospermum</i>	860	<i>Absidia spp</i>	213
<i>Penicillium purpurogenum</i>	632	<i>Firmicutes spp</i>	115

08/19/19 - Pre-treatment bioburden in the above locations are considerably > 300 cfu/m³ which is not acceptable and needs corrective action.

10/07/19 - In-treatment results show **81.7% decrease** in bioburden and is now 100 to 300 cfu/m³ which is **marginal** per the Target Air Quality guide. Continued airPHX treatment will further reduce the bioburden.

- The halls 1 & 2nd turf, 3rd floor nutrition and turf 3 areas which are out of the direct airPHX treatment area has seen the “halo effect” from the treatment area showing a **40.8% reduction**.



Observations

The exterior air samples ranged from **2,300 to 2,700 cfu/m³** and reveals that most of the bioburden is attributed to the outside air. locations. The airPHX units are 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 cfu/m³ is considered **clean and acceptable**.
- 100 to 300 cfu/m³ is **marginal**.
- > 300 cfu/m³ is **not acceptable** and needs corrective action.

In most cases, air quality < **100 cfu/m³** 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 ²)	Range	Standard Deviation	% Reduction
08/19/19	Pre	9	Various	56.4	28.5/125	31.2	-
10/07/19	In			2.1	1.0/4.1	1.1	96.3
08/19/19	Pre	1	Neg. Control	0	0/0	-	-
10/07/19	In			0	0/0	-	-

08/19/19 - Pre-treatment contact swab results from the various locations are noticeably > 5 cfu/cm² which is considered not acceptable and needs corrective action.

10/07/19 - In-treatment results show a **96.3% reduction** and now is < **5 cfu/cm²** which is considered **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 cfu/cm² is considered **clean and acceptable**.
- 5 to 10 cfu/cm² is considered **marginal**.
- > 10 cfu/cm² is considered **not acceptable** and needs corrective action.

In most cases, surface swabs < **5 cfu/cm²** 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,

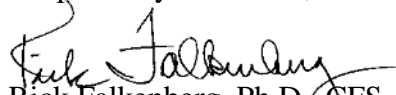

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Senior Principal Scientist



Table #1
University of [REDACTED] ATR
10/07/19 In-treatment Air Sample Results - CFU/m³

In-treatment 10/07/2019 U of [REDACTED] ATR						
Plate Lot No.	Air Sample Location	Air Sample Location	Liters of Air	Raw Count	Corrected Count	CFU/m ³
2814	Ctrl	Unopened	0	0	0	0
2806	1	ATR	30	8	8	267
2822	2	ATR	30	4	4	133
2830	3	ATR	30	3	3	100
2838	4	ATR	30	6	6	200
2846	5	ATR	30	3	3	100
2854	6	ATR	30	3	3	100
2862	7	ATR	30	3	3	100
2870	8	ATR	30	5	5	167
2878	9	Orto	30	6	6	200
2809	10	Performance	30	3	3	100
2817	11	Taping	30	6	6	200
2825	12	Hall	30	10	10	333
2833	13	Hall	30	11	11	367
2857	14	Turf	30	26	28	933
2865	15	3rd floor nutrition	30	20	21	700
2881	16	2nd Turf	30	19	20	667
2873	17	3rd Turf	30	21	22	733
2849	1	Exterior	30	65	80	2,667
2841	2	Exterior	30	68	81	2,700

Avg 152 High 267
Low 100 SD 55.7

Avg 622 High 933
Low 333 SD 210.5

Avg 2,683 High 2,700
Low 2,667 SD 16.7

Total Adjusted Raw Count 162
Total CFU/m³ 5,400

Table #1, continued
University of [REDACTED] ATR
08/19/19 Pre-treatment Air Sample Results - CFU/m³

Pre-treatment 08/19/2019 U of [REDACTED] ATR						
Plate Lot No.	Air Sample Location	Air Sample Location	Liters of Air	Raw Count	Corrected Count	CFU/m ³
3004	Ctrl	Unopened	0	0	0	0
3005	1	ATR	30	25	27	900
3006	2	ATR	30	22	23	767
3007	3	ATR	30	21	22	733
3008	4	ATR	30	23	24	800
3009	5	ATR	30	25	27	900
3010	6	ATR	30	22	23	767
2704	7	ATR	30	19	20	667
2703	8	ATR	30	23	24	800
2702	9	Orto	30	18	19	633
2701	10	Performance	30	28	30	1,000
2700	11	Taping	30	32	35	1,167
2699	12	Hall	30	25	27	900
2697	13	Hall	30	22	23	767
2696	14	2nd Turf	30	39	43	1,433
2695	15	3rd Floor nutrition	30	31	33	1,100
2694	1	Exterior	30	65	80	2,667
3001	2	Exterior	30	59	69	2,300

Avg 830 High 1,167
Low 633 SD 269.0

Avg 1,050 High 1,433
Low 767 SD 251.1

Avg 2,483 High 2,667
Low 2,300 SD 183.3

Total Adjusted Raw Count 400
Total CFU/m³ 13,333



Table #2
University of [REDACTED] ATR
10/07/19 In-treatment Surface Sample Results – CFU/cm²

In-treatment 10/07/2019 U of [REDACTED] ATR					
Room	Swab Number	Surface Swab Sample Location	10x10x10 cm	Raw Count	CFU/cm ²
N/A	CTRL	Swab not removed from container	0	0	0
Surface	1	Treatment table	10x10x10	150	1.5
Surface	2	Physician table	10x10x10	245	2.5
Surface	3	Training table	10x10x10	310	3.1
Surface	4	Floor into bath	10x10x10	125	1.3
Surface	5	Taping table	10x10x10	115	1.2
Surface	6	Crashbar - right door	10x10x10	100	1.0
Surface	7	Xray table	10x10x10	105	1.1
Surface	8	Rail on Dexa scan	10x10x10	345	3.5
Surface	9	[REDACTED] desk	10x10x10	410	4.1
				Avg	2.1
				Min	1.0
				Max	4.1
				SD	1.12

Total Adjusted Raw Count 1,905
Total CFU/cm² 19

Table #2, continued
University of [REDACTED] ATR
08/19/19 Pre-treatment Surface Sample Results – CFU/cm²

Pre-treatment 08/19/2019 U of [REDACTED] ATR					
Room	Swab Number	Surface Swab Sample Location	10x10x10 cm	Raw Count	CFU/cm ²
N/A	CTRL	Swab not removed from container	0	0	0
Surface	1	Treatment table	10x10x10	3,500	35.0
Surface	2	Physician table	10x10x10	5,850	58.5
Surface	3	Training table	10x10x10	7,500	75.0
Surface	4	Floor into bath	10x10x10	3,650	36.5
Surface	5	Taping table	10x10x10	3,410	34.1
Surface	6	Crashbar - right door	10x10x10	2,850	28.5
Surface	7	Xray table	10x10x10	2,950	29.5
Surface	8	Rail on Dexa scan	10x10x10	8,520	85.2
Surface	9	[REDACTED] desk	10x10x10	12,500	125.0
				Avg	56.4
				Min	28.5
				Max	125.0
				SD	31.16

Total Adjusted Raw Count 50,730
Total CFU/cm² 507



Table #3
University of [REDACTED] ATR
10/07/2019 In-treatment Air Sample Pictures

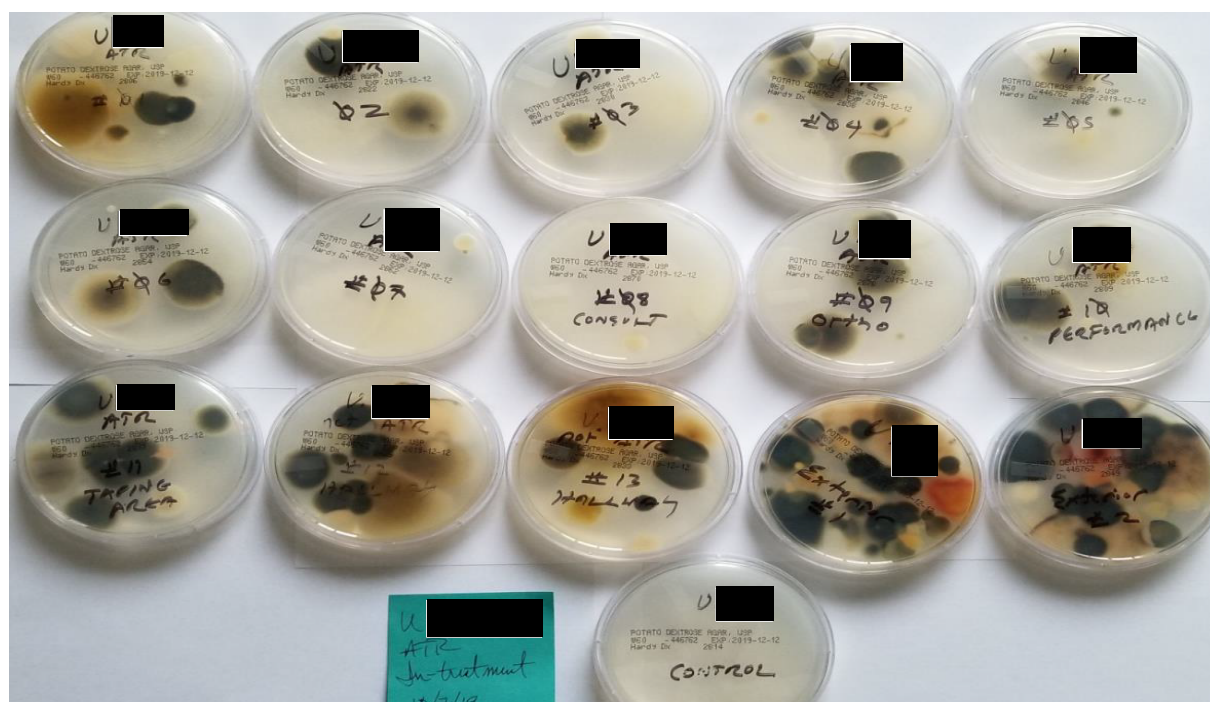
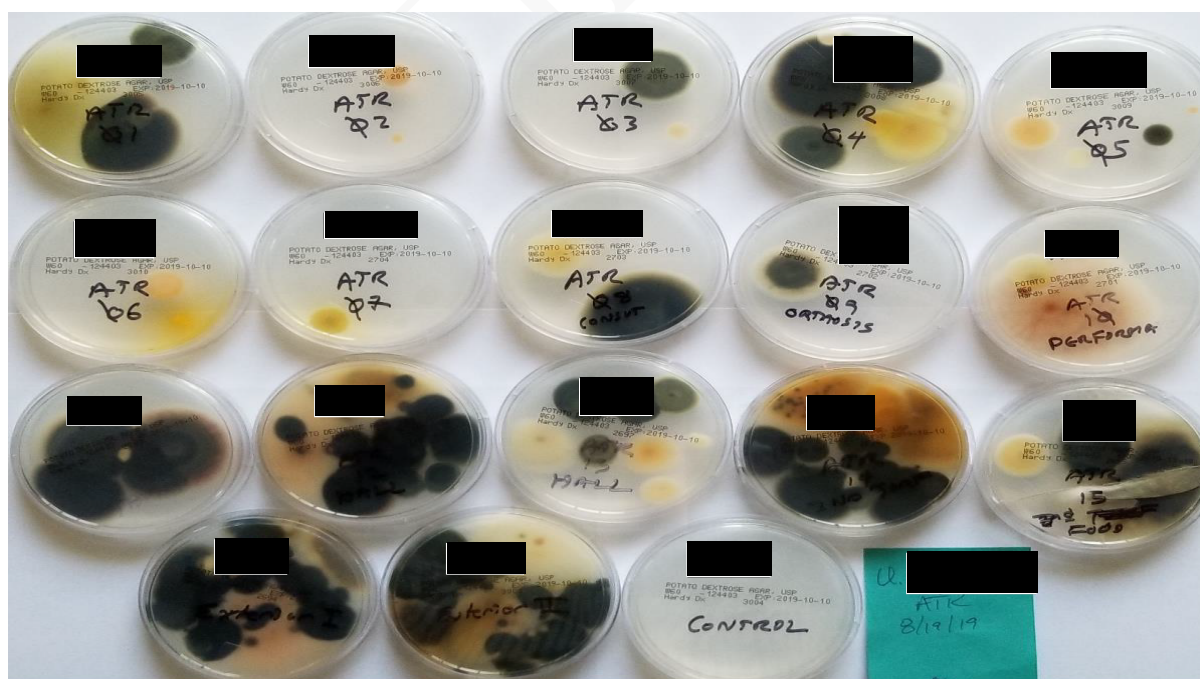


Table #3, continued
University of [REDACTED] ATR
08/19/2019 Pre-treatment Air Sample Pictures



Scientific Air Solution



Table #4
University of [REDACTED] ATR
 10/07/19 and 08/19/19 Pre and In-treatment Air and Surface Swab Locations

