

Scientific Air Solutions



SW Group LLC December 8, 2018
7823 Village Drive
Knoxville, TN 37919

Pre and In-Treatment Air and Surface Report – Sports – Final Report

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	Percent Reduction
09/07/18	Pre	3	Men's Locker Room	1,800	1,667/1,933	108.9	-
11/29/18	In			33	56/67	15.7	98.2
09/07/18	Pre	7	Lower Level Track and Workout area	2,043	1,767/2,300	175.2	-
11/29/18	In			90	67/133	23.3	95.6
09/07/18	Pre	3	Exterior	2,811	2,567/3,000	181.2	-
11/29/18	In			1,811	1,667/1,967	122.7	35.6

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 finding of the types of airborne organisms found in the above locations excluding the outside during this pre-treatment sampling.

Species	Raw Count	Species	Raw Count
<i>Penicillium, aspergillus types</i>	350	<i>Cladosporium sphaerospermum</i>	< 5
<i>Aspergillus fumigatus</i>	275	<i>Mortierella, spp</i>	< 5
<i>Penicillium purpurogenum</i>	105	<i>Basidiospores spp</i>	< 5
<i>Penicillium brevicompactum</i>	63	<i>Absidia, spp</i>	< 5

11/29/18 In-treatment bioburden in the sampled rooms are now < 100 cfu/m³ is considered clean and acceptable.

09/07/18 Pre-treatment bioburden in the sampled rooms are significantly above > 300 cfu/m³, which is not acceptable and needs corrective action.

Observations

Outside air, samples ranged from 1,667 to 1,967 cfu/m³, which is less than the pre-treatment samples. However, still shows that a significant amount of the bioburden is coming from the outside air and is being neutralized by the airPHX system.

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.



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	Percent Decrease
09/07/18	Pre	2	Men's Locker Room	38	35/41	3.0	-
11/29/18	In			3	3/4	0.4	92.1
09/07/18	Pre	6	Lower Level Track and Workout area	50	28/67	14.8	-
11/29/18	In			4	2/6	1.2	92.0
09/07/18	Pre	1	Negative control	0	0/0	-	-
11/29/18	In			0	0/0	-	-

11/29/18 - In-treatment contact swab results in all the various locations are < 5 cfu/cm² and is now considered clean and acceptable.

09/07/18 - Pre-treatment contact swab results in all the various locations are appreciably > 10 cfu/cm², which is not acceptable and needs corrective action.

Target Contact Surface Quality

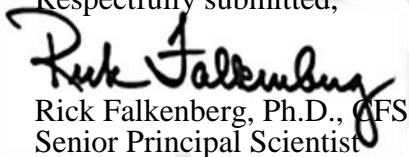
Contact surface quality scale for workplaces, public buildings, schools, and homes are as follows:

- < 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, contact surfaces with < 5 cfu/cm² has shown a decrease in overall bioburden and odors.

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

Respectfully submitted,


Rick Falkenberg, Ph.D., QFS
Senior Principal Scientist

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Table #1

Sports █████, █████

11/29/18 In-treatment Air Sample Results - CFU/m³

Sports █████ Pre-treatment 11/29/18						
Plate Lot No.	Air Sample Location	Air Sample Location	Liters of Air	Raw Count	Corrected Count	CFU/m ³
34	Ctrl	Unopened	0	0	0	0
1619	1	ML Front	30	2	2	67
1618	2	ML Mid	30	2	2	67
1617	3	ML Exit	30	1	1	33
1620	1	(7) End	30	3	3	100
1624	2	6	30	2	2	67
1625	3	5	30	3	3	100
1627	4	(4) Center	30	4	4	133
1626	5	3	30	2	2	67
1628	6	2	30	2	2	67
1629	7	(1) Front	30	3	3	100
Avg 56 High 67						
Low 33 SD 15.7						
3481	1	EXT	30	45	50	1,667
3480	2	EXT	30	52	59	1,967
3479	3	EXT	30	48	54	1,800
Avg 1,811 High 1,967						
Low 1,667 SD 122.7						

Total Adjusted Raw Count 187

Total CFU/m³ 800

Table #1, continued

Sports █████, █████

09/07/18 Pre-treatment Air Sample Results - CFU/m³

Sports █████ Pre-treatment 09/07/18						
Plate Lot No.	Air Sample Location	Air Sample Location	Liters of Air	Raw Count	Corrected Count	CFU/m ³
34	Ctrl	Unopened	0	0	0	0
1619	1	ML Front	30	51	58	1,933
1618	2	ML Mid	30	48	54	1,800
1617	3	ML Exit	30	45	50	1,667
1620	1	(7) End	30	53	61	2,033
1624	2	6	30	47	53	1,767
1625	3	5	30	55	63	2,100
1627	4	(4) Center	30	49	55	1,833
1626	5	3	30	57	66	2,200
1628	6	2	30	54	62	2,067
1629	7	(1) Front	30	59	69	2,300
Avg 1,800 High 1,933						
Low 1,667 SD 108.9						
3481	1	EXT	30	65	77	2,567
3480	2	EXT	30	74	90	3,000
3479	3	EXT	30	71	86	2,867
Avg 2,811 High 3,000						
Low 2,567 SD 181.2						

Total Adjusted Raw Count 844

Total CFU/m³ 19,700

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Table #2

Sports █████, █████

11/29/18 Pre-treatment Surface Sample Results – CFU/cm²

Sports █████ Pre-treatment 11/29/18					
Room	Swab Number	Surface Swab Sample Location	10x10x10 cm	Raw Count	CFU/cm ²
N/A	CTRL	Control swab	0	0	0
SB	1	ML Front	10x10x10	275	3
SB	2	ML End wall	10x10x10	350	4
SB	1	Floor main runway	10x10x10	450	5
SB	2	Elipitical pannel	10x10x10	200	2
SB	3	Leg lift bench	10x10x10	575	6
SB	4	Floor	10x10x10	500	5
SB	5	Arm lift	10x10x10	510	5
SB	6	Butt blaster seat	10x10x10	450	5

Avg 3 Max 4
Min 3 SD 0.4

Avg 4 Max 6
Min 2 SD 1.2

Total Adjusted Raw Count 3,310

Total CFU/cm² 33

Table #2, continued

Sports █████, █████

09/07/18 Pre-treatment Surface Sample Results – CFU/cm²

Sports █████ Pre-treatment 09/07/18					
Room	Swab Number	Surface Swab Sample Location	10x10x10 cm	Raw Count	CFU/cm ²
N/A	CTRL	Control swab	0	0	0
SB	1	ML Front	10x10x10	3,500	35
SB	2	ML End wall	10x10x10	4,100	41
SB	1	Floor main runway	10x10x10	2,750	28
SB	2	Elipitical pannel	10x10x10	5,900	59
SB	3	Leg lift bench	10x10x10	6,700	67
SB	4	Floor	10x10x10	5,650	57
SB	5	Arm lift	10x10x10	3,100	31
SB	6	Butt blaster seat	10x10x10	5,600	56

Avg 38 Max 41
Min 35 SD 3.0

Avg 50 Max 67
Min 28 SD 14.8

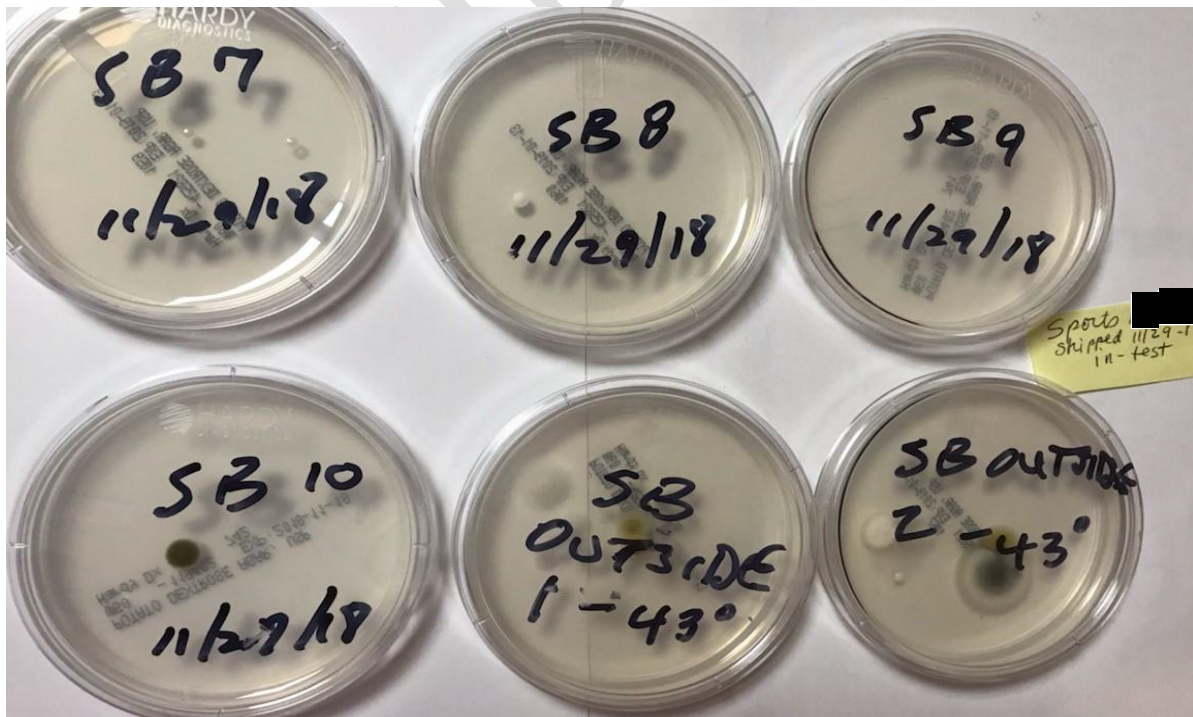
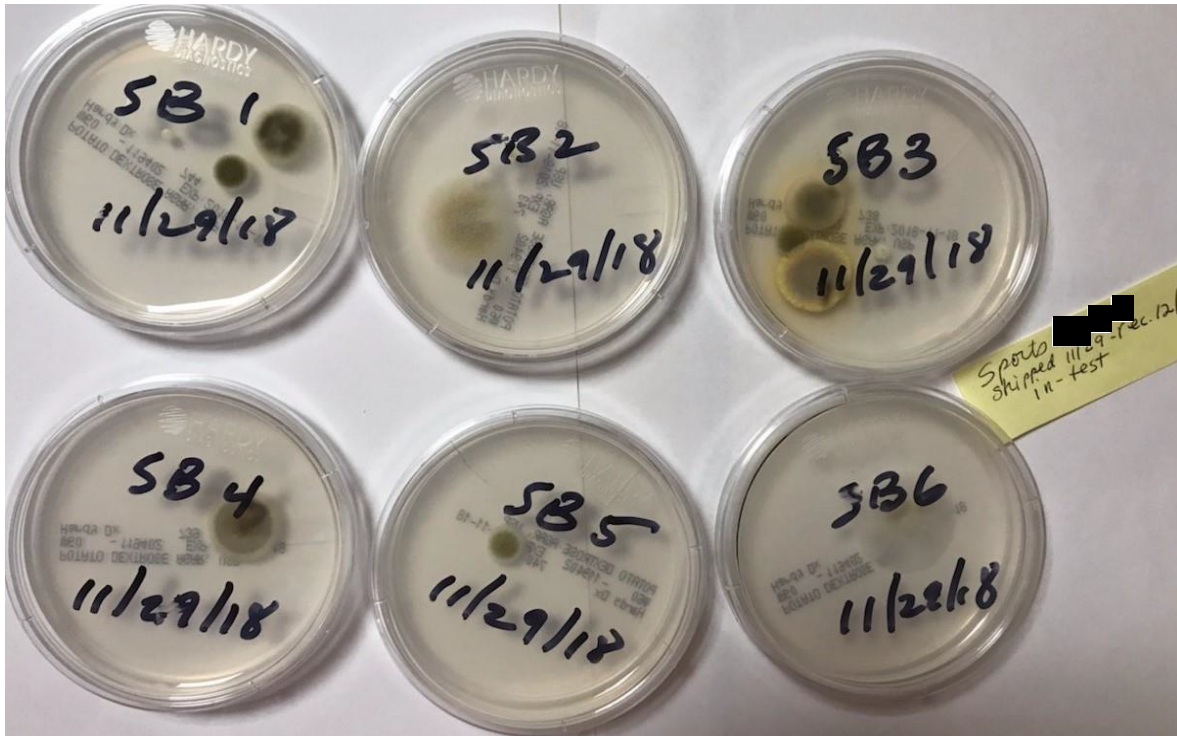
Total Adjusted Raw Count 37,300

Total CFU/cm² 373



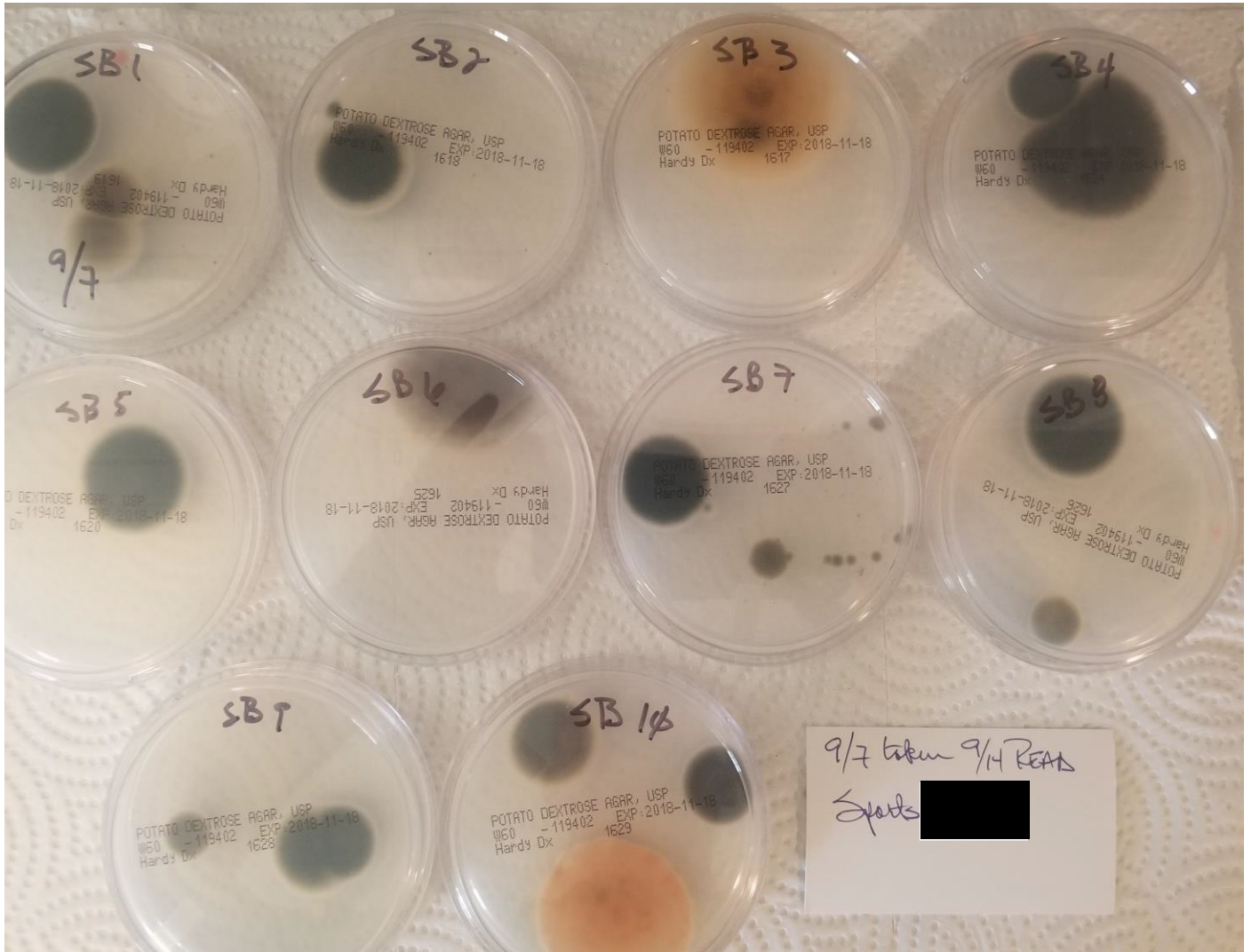
Table #3
Sports [REDACTED], [REDACTED]
In and Pre-treatment Air Sample Pictures

11/29/18 In-treatment





9/07/18 Pre-treatment



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Table #4
Sports [redacted], [redacted]
Air and Contact Swab Sample Location Map

09/07/18 Pre-treatment and 11/29/18 In-treatment

