

MOULD ANALYTICAL REPORT

Report Number:	1349
Property:	123 Test Street Suburb, QLD 4567
Client:	Jane Smith
Date of sampling:	06/05/2020
Sampled by (Name): (Company):	John Smith -
Reported and released by:	Dr. Alexander Wilkie, PhD, BBiotech (Hons), IICRC AMRT & WRT Mycologist
Date of report:	07/05/2020
Job reference:	10750
Purpose of Report:	To assess the levels and genera of mould present pre-remediation.

1.0 Disclaimers

- 1.1 This document and its contents are intended for the addressed client only and is based on the samples provided.
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- 1.5 Analysis of the samples provided only show information for the period in time which was tested. This data only provides a snapshot of the level of contamination and is subject to change over time.
- 1.6 Indoor Environmental Consulting and Labs is not a medical authority. If you have any health concerns seek professional medical care.

2.1 Testing & Sampling Details - Mould Genera

No.	Sample ID	Sample Type	Location Information	Mould Genera Predominantly Observed	Mould Levels
1	12345678	Air-O-Cell	Outdoor Reference	<i>Ascospores</i>	730
2	12345679	Bio Tape	Rumpus	<i>Aspergillus/Penicillium</i>	304
3	12345680	Air-O-Cell	Bedroom 1	<i>Aspergillus/Penicillium</i>	12595
4	12345681	Air-O-Cell	Bathroom	<i>Aspergillus/Penicillium</i>	4378
5	12345682	Air-O-Cell	Bedroom 2	<i>Aspergillus/Penicillium</i>	374784

3.0 Results - Air & Surface Fungal Structures

Table 3.1 - Data of mould analysis (for complete results data see appendix)	Sample type No.	Air	Surface	Air		
		1	2	3	4	5
	Sample Location	Outdoor Reference	Rumpus	Bedroom 1	Bathroom	Bedroom 2
	Spore info	FS / m ³	FS / cm ²	FS / m ³	FS / m ³	FS / m ³
Pollen	🌼					
Fungal Hyphae	🌫️		8		422	3264
Unidentified spores						
<i>Alternaria</i>	🌫️🌸🚫💧					
Ascospores	🌫️🌸	192				
<i>Aureobasidium</i>	🌫️🌸					
<i>Aspergillus/Penicillium</i>	🌫️🌸🚫💧	77	192	10714	3725	365568
Basidiospores	🌫️	115	33	384	115	
<i>Bipolaris/Drechslera</i>	🌫️🌸					
<i>Chaetomium</i>	🌫️🌸🚫💧			269	115	5568
<i>Cladosporium</i>	🌫️🌸	192	71	307		384
<i>Curvularia</i>	🌫️🌸					
<i>Diplodia</i>						
<i>Epicoccum</i>	🌫️					
<i>Fusarium</i>	🌫️🌸🚫💧					
<i>Mucor</i>	🌫️🌸					
<i>Nigrospora</i>	🌫️					
<i>Oidium/Peronospora</i>				77		
<i>Pithomyces</i>						
<i>Rust (Pucciniales)</i>	🌫️					
<i>Smut/Myxomyces/Periconia</i>	🌫️	115				
<i>Scopulariopsis</i>	🌫️🌸					
<i>Stachybotrys</i>	🌫️🌸🚫💧					
<i>Sepedonium</i>	🌫️					
<i>Torula</i>	🌫️					
<i>Tetraploa</i>		38				
<i>Walleimia</i>	🌫️🌸💧			845		
Total Fungal Structures		730	304	12595	4378	374784
Debris rating		1	2	2	2	4
Detection limit		38	4	38	38	192

Legend:	FS	Fungal Structures	RISK	Health Impact
	🌫️	Allergenic	ORANGE	Mould genera pose an ELEVATED RISK to health and wellbeing of people
	🌸	Cause of Infection	RED	High spore concentrations
	🚫	Mycotoxin Producing	ORANGE	Elevated spore concentrations
	💧	Water Damage Indicator		

4.0 Discussion and Conclusions

Air sampling of the premises revealed very high mould levels in Bedroom 2 and Bedroom 1. Levels detected were 12595 fungal structures per cubic metre of air in bedroom 1 and 374784 FS/m³ in bedroom 2. Elevated mould levels were also observed in the bathroom with 4378 FS/m³. Aspergillus/Penicillium spores were predominantly observed. Aspergillus/Penicillium contain species which are known to be allergenic and produce mycotoxins.

Kind regards,



Dr. Alexander Wilkie

Mycologist / IEP

PhD, BBiotech (Hons)

5.0 References

- a. "Standard & Reference Guide for Professional Mold Remediation" IICRC S520 -2015, 3rd Edn Institute of Inspection, Cleaning & Restoration Certification, Vancouver, Washington 98661 USA.
- b. "Australian Mould Guidelines (AMG 2010)" 2nd Edn. Kemp, P.C et al. Messenger Publishing 2010
- c. "WHO Guidelines for Indoor Air Quality – Dampness and Mould", 2009 World Health Organisation, Copenhagen, Denmark, ISBN 978 92 890 4168 3.
- d. "Microorganisms in home and indoor work environments. Diversity, health impacts, investigation & control." Flannigan, B, Samson, R. A & Miller, J. D. 2nd Edn. 2011. CRC Press, Boca Raton, London & New York.
- e. "Identifying Fungi – A clinical laboratory handbook" 2nd Edn. 2011 Guy St-Germain, Richard Summerbell. Star Publishing Co. Ltd., Belmont, CA, USA. ISBN 978 08986 311 5
- f. ASTM D7391-17e1, Standard Test Method for Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy, ASTM International, West Conshohocken, PA, 2017
- g. Environmental Analysis Associates, Inc. Air-o-cell Method Interpretation Guide, January 2011

6.0 Appendices

Table 6.1a Extended results % Analysed	Outdoor Reference			Rumpus			Bedroom 1		
	12345678	AOC 34.7%		12345679	BT 6.0%		12345680	AOC 34.7%	
	Raw count	FS / m ³	% of total	Raw count	FS / cm ²	% of total	Raw count	FS / m ³	% of total
Pollen									
Fungal Hyphae				2	8	3%			
Unidentified spores									
<i>Alternaria</i>									
Ascospores	5	192	26%						
<i>Aureobasidium</i>									
<i>Aspergillus/Penicillium</i>	2	77	11%	46	192	63%	279	10714	85%
Basidiospores	3	115	16%	8	33	11%	10	384	3%
<i>Bipolaris/Drechlera</i>									
<i>Chaetomium</i>							7	269	2%
<i>Cladosporium</i>	5	192	26%	17	71	23%	8	307	2%
<i>Curvularia</i>									
<i>Diplodia</i>									
<i>Epicoccum</i>									
<i>Fusarium</i>									
<i>Mucor</i>									
<i>Nigrospora</i>									
<i>Oidium/Peronospora</i>							2	77	1%
<i>Pithomyces</i>									
<i>Rust (Pucciniales)</i>									
<i>Smut/Myxomyces/Periconia</i>	3	115	16%						
<i>Scopulariopsis</i>									
<i>Stachybotrys</i>									
<i>Sepedonium</i>									
<i>Torula</i>									
<i>Tetraploa</i>	1	38	5%						
<i>Wallemia</i>							22	845	7%
Total Fungal Structures	19	730	100%	73	304	100%	328	12595	100%
Debris		1			2			2	
Detection limit	1	38.4		1	4.1667		1	38.4	
Trace length		2			16			2	
FOV diameter		0.5			0.5			0.5	
# traverses		10			3			10	
Air volume		0.075			1			0.075	
Length counted		5			1.5			5	
Ratio counted		0.3472			0.06			0.3472	
Total area counted		10			24			10	
Multiplication factor		2.88			4.1667			2.88	
Slide diameter		14.4			25			14.4	
MF coefficient		28.8			100			28.8	

Table 6.1b Extended results (Cont'd) % Analysed	Bathroom			Bedroom 2		
	12345681		AOC 34.7%	12345682		AOC 6.9%
	Raw count	FS / m ³	% of total	Raw count	FS / m ³	% of total
Pollen						
Fungal Hyphae	11	422	10%	17	3264	1%
Unidentified spores						
<i>Alternaria</i>						
Ascospores						
<i>Aureobasidium</i>						
<i>Aspergillus/Penicillium</i>	97	3725	85%	1904	365568	98%
Basidiospores	3	115	3%			
<i>Bipolaris/Drechslera</i>						
<i>Chaetomium</i>	3	115	3%	29	5568	1%
<i>Cladosporium</i>				2	384	0%
<i>Curvularia</i>						
<i>Diplodia</i>						
<i>Epicoccum</i>						
<i>Fusarium</i>						
<i>Mucor</i>						
<i>Nigrospora</i>						
<i>Oidium/Peronospora</i>						
<i>Pithomyces</i>						
<i>Rust (Pucciniales)</i>						
<i>Smut/Myxomyces/Periconia</i>						
<i>Scopulariopsis</i>						
<i>Stachybotrys</i>						
<i>Sepedonium</i>						
<i>Torula</i>						
<i>Tetraploa</i>						
<i>Wallemia</i>						
Total Fungal Structures	114	4378	100%	1952	374784	100%
Debris		2			4	
Detection limit	1	38.4		1	192	
Trace length		2			2	
FOV diameter		0.5			0.5	
# traverses		10			2	
Air volume		0.075			0.075	
Length counted		5			1	
Ratio counted		0.3472			0.0694	
Total area counted		10			2	
Multiplication factor		2.88			14.4	
Slide diameter		14.4			14.4	
MF coefficient		28.8			28.8	

6.2 Methodology and additional information

- a. Analysis of samples were performed according to the ASTM D7391-17e1 method for categorization and quantification of airborne fungal structures.
- b. Sample identification was performed to the genus level.
- c. Samples were received in good condition unless otherwise stated.
- d. This analysis relates only to the samples provided and mentioned in this report.
- e. Air samples were collected using Air-O-Cell (Zefon) slit impaction cassettes. Sampling of 75L of air was collected over a 5-minute period at a flow rate of 15L/min unless specified otherwise.
- f. 34% of each air sample was read under 400-600x magnification to count fungal structures and identify to genus level.
- g. A minimum of 1 traverse (2% of slide examined) or 2000 spores were counted for each surface sample without excessive contamination.
- h. Surface samples with very high mould levels were analysed by counting random fields under 400x or 600x magnification and calculating the average of the fields. Average counts were then used to calculate FS/cm² based on area counted. For slides counted in this manner "# traverses" means "# fields counted".
- i. Samples with debris ratings of 3 or higher are estimates only as debris may obscure visibility of spores.

6.3 Interpretation of Results

The following guidelines can be used to assess airborne and surface fungal concentrations and types indoors:

Typical indoor Airborne Fungal Spore Concentration Ranges (Ref. f)

Description	Spores (counts/m ³)	Predominant Types
Clean building	Less than 2,000	Total for all spore types
	Less than 700	<i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i>
Possible indoor amplification	1,000 – 5,000	<i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i>
Indoor amplification likely present	5,000 – 10,000	<i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i>
Chronic indoor amplification	10,000 – 500,000	<i>Penicillium</i> , <i>Aspergillus</i> , <i>Cladosporium</i>
Inadequate flood cleanup or active indoor destruction of contaminated surfaces	500,000 – 10,000,000	<i>Penicillium</i> , <i>Aspergillus</i> , <i>Stachybotrys</i> , <i>Cladosporium</i> , <i>Chaetomium</i> , <i>Basidiomycetes</i> , <i>Trichoderma</i> , <i>Ulocladium</i> , etc.

Total Fungal Hygiene Guide for Indoor Surfaces (Ref. b)

Rating	Total Surface Fungal Spore Concentration
Low	<50 spores/cm ²
Normal	50 to 500 spores/cm ²
Elevated	500 to 1000 spores/cm ² + prevailing species
Contaminated	>1000 spores/cm ² + dominant species + Propagules
Extreme contamination	>5000 spores/cm ² + dominant species + Propagules + confluent spores