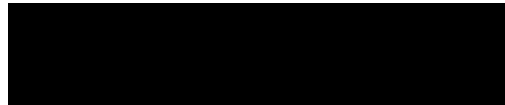




# **Remediation Scope of Work & Laboratory Analysis Results**



A Service Provided by Arrowhead Consulting Inc.  
P.O. Box 217  
Broad Run, Virginia 20137  
240-832-5900



09/10/2019

[REDACTED]

[REDACTED]

[REDACTED]

Arrowhead Consulting Inc. conducted a mold inspection on 08/29/2019 at the above referenced property. This inspection was conducted to gather data for the assessment of potential mold growth within the home, moisture level evaluation of building materials, as well as the formation of a Microbial Remediation Scope of Work. Non-viable air and surface samples were taken during this inspection to verify mold growth. Laboratory analysis results can be found in Appendix A. Digital photos were taken and are included in this report.

#### Client Provided Information

The following information was reported by the client at the time of this assessment

- Suspected mold growth in the home.
- History of leaks in the unit (kitchen and bathroom).

#### Inspectors Visual Inspection

- Visible mold growth on bathroom ceiling and walls.
- Active leak above the bathroom ceiling.
- Visible mold growth and water staining behind kitchen cabinet.
- Water damaged wall materials in living room (adjacent to impacted kitchen wall).
- Hvac ducts extremely dirty and bathroom vent completely clogged with debris.
- No access to Hvac closet at the time of inspection.



Visible mold growth on bathroom ceiling



Mold growth on bathroom ceiling and walls



Mold growth on bathroom walls



Bathroom vent completely clogged



Visible mold growth and water damage to kitchen walls



Water damaged living room ceiling  
(adjoining impacted kitchen wall)

# Appendix A

## Certificates of Laboratory Analysis



**AIHA-LAP EMLAP# 102977**

43760 Trade Center Place  
Suite 100  
Sterling, Virginia 20166

Arrowhead Consulting, Inc.  
5064 Country Creek Lane  
Broad Run, Virginia 20137  
Attn: Rusty Spearman  
Project: XXXXXXXXXX  
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 08/29/2019  
Date Received: 08/29/2019  
Date Analyzed: 08/30/2019  
Date Reported: 09/03/2019  
Project ID: 19039033  
Page 1 of 4

1054 Spore Trap Analysis: SOP 3.8

Client Sample Number	3				5			
Sample Location	Living Room				Control			
Sample Volume (L)	30				30			
Lab Sample Number	19039033-003				19039033-005			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	12	400	1	-
ascospores	3	100	7	1/23	68	2267	3	-
basidiospores	20	667	49	1/62	78	41600	58	-
Cercospora	-	-	-	-	5	167	<1	-
Cladosporium	2	67	5	1/288	72	19200	27	-
Curvularia	-	-	-	-	2	67	<1	-
Fuscladium	-	-	-	-	3	100	<1	-
Helicosporium/Helicomyces	-	-	-	-	1	33	<1	-
hyphal elements	3	100	7	1/15	44	1467	2	-
Penicillium/Aspergillus group	7	233	17	1/25	175	5833	8	-
Pestalotiopsis	-	-	-	-	1	33	<1	-
Pithomyces	2	67	5	-	-	-	-	-
Pyricularia	-	-	-	-	3	100	<1	-
Rusts	-	-	-	-	1	33	<1	-
Smuts,Periconia,Myxomycetes	4	133	10	1/5	20	667	1	-
	Debris Rating 2				Debris Rating 2			
Analytical Sensitivity	Analytical Sensitivity: 33 spr/m³				Analytical Sensitivity: 33 spr/m³			
Comments								
Total *See Footnotes	41	1367	~100%	1/53	485	71967	~100%	-

Arrowhead Consulting, Inc.  
5064 Country Creek Lane  
Broad Run, Virginia 20137  
Attn: Rusty Spearman  
Project: XXXXXXXXXX  
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 08/29/2019  
Date Received: 08/29/2019  
Date Analyzed: 08/30/2019  
Date Reported: 09/03/2019  
Project ID: 19039033  
Page 2 of 4

Client Sample Number	4				5			
Sample Location	Hallway				Control			
Sample Volume (L)	30				30			
Lab Sample Number	19039033-004				19039033-005			
Spore Identification	Raw Ct	spr/m³	% Ttl	In/Out	Raw Ct	spr/m³	% Ttl	In/Out
Alternaria	-	-	-	-	12	400	1	-
ascospores	-	-	-	-	68	2267	3	-
basidiospores	7	233	33	1/178	78	41600	58	-
Cercospora	-	-	-	-	5	167	<1	-
Cladosporium	1	33	5	1/576	72	19200	27	-
Curvularia	-	-	-	-	2	67	<1	-
Fusicladium	-	-	-	-	3	100	<1	-
Helicosporium/Helicomyces	-	-	-	-	1	33	<1	-
hyphal elements	3	100	14	1/15	44	1467	2	-
Penicillium/Aspergillus group	7	233	33	1/25	175	5833	8	-
Pestalotiopsis	-	-	-	-	1	33	<1	-
Pithomyces	1	33	5	-	-	-	-	-
Pyricularia	-	-	-	-	3	100	<1	-
Rusts	-	-	-	-	1	33	<1	-
Smuts,Periconia,Myxomycetes	2	67	10	1/10	20	667	1	-
	Debris Rating 2				Debris Rating 2			
Analytical Sensitivity	Analytical Sensitivity: 33 spr/m³				Analytical Sensitivity: 33 spr/m³			
Comments								
Total *See Footnotes	21	700	~100%	1/103	485	71967	~100%	-

Client Sample #: 1  
Sample Location: Bathroom Ceiling  
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Lab Sample #: 19039033-001

Results:	Observation
Numerous Cladosporium spores seen	3-4 per field (minimum)
Numerous hyphal elements seen	3-4 per field (minimum)

Debris Rating: 3



**Certificate of Analysis**  
AIHA-LAP EMLAP# 102977

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Suite 100  
Sterling, Virginia 20166  
(877) 648-9150  
www.aerobiology.net

Arrowhead Consulting, Inc.  
5064 Country Creek Lane  
Broad Run, Virginia 20137  
Attn: Rusty Spearman  
Project: [REDACTED]  
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 08/29/2019  
Date Received: 08/29/2019  
Date Analyzed: 08/30/2019  
Date Reported: 09/03/2019  
Project ID: 19039033  
Page 3 of 4

Client Sample #: 2  
Sample Location: Kitchen Base Cabinet  
Test: 1051, Surface - Qualitative Direct Microscopic Exam SOP 3.7: 24hr TAT

Lab Sample #: 19039033-002

Results:	Observation
Few Chaetomium spores seen	5 per cover slip
Numerous Cladosporium spores seen	3-4 per field (minimum)
Numerous hyphal elements seen	3-4 per field (minimum)
Few Monodictys spores seen	5 per cover slip

Debris Rating: 3



Arrowhead Consulting, Inc.  
 5064 Country Creek Lane  
 Broad Run, Virginia 20137  
 Attn: Rusty Spearman

Project: XXXXXXXXXX  
 Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 08/29/2019  
 Date Received: 08/29/2019  
 Date Analyzed: 08/30/2019  
 Date Reported: 09/03/2019  
 Project ID: 19039033  
 Page 4 of 4

## Footnotes and Additional Report Information

### Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

Aerobiology Laboratory shall be responsible for all the information provided in the report, except when information is provided by the customer. Aerobiology Laboratory is not responsible for the sampling activity. The report shall not be reproduced except in full without approval of the laboratory can provide assurance that parts of a report are not taken out of context.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.

2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.

3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.

4. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.

5. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.

6. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).

7. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole, for this reason the sum of the calculated counts may be less than the positive hole corrected total.

8. Due to rounding totals may not equal 100%.

9. Analytical Sensitivity for each spores is different for Non-viable sample when the spores are read at different percentage. Analytical Sensitivity is calculated as  $\text{spr/m}^3$  divided by raw count.  $\text{spr/m}^3 = \text{raw counts} \times (100\% / \text{read}) \times (1000 / \text{Sample volume})$ . If Analytical Sensitivity is 13  $\text{spr/m}^3$  at 100% read, Analytical Sensitivity at 50% read would be 27  $\text{spr/m}^3$ , which is 2 times higher. Analytical Sensitivity provided on the report is based on an assumed 100% of the trace being analyzed.

10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.

11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.

12. The results in this report are related to this project and these samples only.

13. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should be considered (3) three. For example, a sample with a result of 55,443  $\text{spr/m}^3$  from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400  $\text{spr/m}^3$ .

14. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

#### Terminology Used in Direct Exam Reporting

**Conidiophores** are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.

*Suzanne S. Blevins*

Suzanne S. Blevins, B.S., SM (ASCP)  
 Laboratory Director

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## Non-Viable Microbial Sampling

Report developed and generated by

William R. Spearman CIE, CMRS, DC Mold Assessor License # MA-2018-R-01

Page 7



Samples were delivered to Aerobiology Laboratory Associates, Inc. of Dulles, Virginia for analysis. Fungal analysis was performed by a certified Microbiologist using direct microscopic examination to identify fungal groups and concentration.

### Conclusion

Testing and analysis results of the bathroom ceiling surface sample verifies elevated levels of Cladosporium spores and Hyphal Elements. Testing and analysis results of the kitchen base cabinet surface sample verifies elevated levels of Chaetomium, Cladosporium and Hyphal Elements. Testing and analysis results of the indoor air samples verifies normal spore counts in the breathable air space. “The spores of molds can be a source of exposure to toxins via inhalation” (American Industrial Hygiene Association AIHA, Recognition, Evaluation, and Control of Indoor Mold 1.3.3). It’s been determined that the existing mold growth in the home is due to prior water event(s) resulting in elevated Relative Humidity (RH%) levels in the bathroom and kitchen.

### Recommendations

Proper remedial actions should strictly follow industry accepted practices and procedures for fungal abatement.

Mold is commonly found outside but can also become a contaminant once inside a building environment. Molds can potentially produce allergenic reactions to certain people when exposed to them.

Every remediation site is different and different protocol and methods may need to apply, you the home or building owner should be informed of progress as an ongoing dialog. The purpose of mold remediation is to remove contaminated materials thus allowing the home/building owner the opportunity to fix the source(s) of moisture.

The procedures in this document are ones that are found in industry recognized documents and/or the best practices deemed by Arrowhead Consulting Inc. Since mold requires water and/or high humidity to grow, Arrowhead Consulting Inc. cannot be responsible for future changes in the environment. It is important to fix the moisture problem that caused the microbial growth so that it does not re-occur. Arrowhead Consulting Inc. does not guarantee or warranty against any future re-occurrence. We guarantee that the procedures outlined in this document are the industry standards (or better) at the time of the issuance of this document. MSDS sheets should be made available for all products used and OSHA mandated work practices need to be followed. Insurances, Certifications, Licenses, and References should be made available for your inspection at any time.

### Affected Area(s)

- Bathroom and Kitchen

### Remediation Specifications

- Personnel performing remediation or cleaning of fungal contamination may be at risk for developing Organic Toxic Dust Syndrome (OTDS) or Hypersensitivity Pneumonitis. OTDS may occur after a single heavy exposure to fungi-contaminated dust. All personnel must utilize appropriate personal protection (PPE) in the form of approved respirators, eye protection and protective clothing and gloves. Use of these measures should be restricted to those trained in their proper use.
- Use of Anti-Microbial solutions must be limited to properly ventilated areas. Do not combine chemicals as improper mixing may produce poisonous gasses.
- Remediation efforts should carefully follow the following documents: IICRC S520, EPA Mold Remediation in Commercial Buildings and Schools and New York City Standards for Mold Remediation.
- These Microbial Remediation Specifications do not address any other potential environmental hazards other than mold that might be present in the referenced property and only pertains to those areas included in the assessment and the data provide regarding those areas. Consideration for potential exposure to environmental hazards whether through implementation of these guidelines or any other activity taking place in the property must be evaluated.

*"Hidden mold growth is of significance because mold particulate (spores, mycelia, etc.) has the potential to migrate into occupied areas and results in fungal particulate exposures to occupants".*

Recognition, Evaluation, and Control of Indoor Mold (American Industrial Hygiene Association) Building Evaluation 2.6.6.

*"Microenvironments: The indoor ecosystem comprises an interrelated complex of microenvironments, each of which has its own mix of physical and biological factors and can serve as a reservoir for a variety of pollutants that can potentially affect the quality of the air in occupied spaces. Some microenvironments are structural components such as interior and exterior wall cavities, ceiling spaces, air-handling systems and crawlspaces."*

IICRC R520-2015 Reference Guide for Professional Mold Remediation (Third Edition) Microenvironments, Chapter 2, Page 14.

*"Similarly, colorless hyphal growth usually extends beyond the limits of visible mold growth but is normally remediated by removing or cleaning a margin beyond the visible edges of growth, regardless of whether that growth is hidden."*

*"When the investigation identified hidden mold, it is advised that remediation plans include its removal or cleaning."*

AIHA "Recognition, Evaluation, and Control of Indoor Mold". Chapter 17.5.2, pg. 211.

### Scope of Remediation

1. Studs, floor plates joists and sheathing (structural materials etc.) should be sanded and/or brushed (as required) to remove any fungi. Once the cleaning process is complete, the surfaces may be treated with an anti-microbial biocide compound to prevent further growth and kill any remaining spores. If the use of anti-microbial biocide is required, prior approval for application should be documented in writing and signed by a remediation company representative and all home/building owner(s). Material Safety Data Sheets (MSDS) describing the compound and its risks should be provided to all occupants.
2. The remediation process should end when the project has been successful in returning the contaminated areas back to normal fungal ecology.

### Demolition

- Bathroom ceiling materials (42 sf.).
- Bathroom wall materials (72 sf.).
- Kitchen base cabinets and wall materials behind (24 sf.).
- Kitchen and living room common wall materials (40 sf. combined).

**Note: Additional wall materials may require removal once the remediation has started.**

### Remediation/Cleaning:

1. Sanding and/or wipe down of all exposed structural items (joists, framing, sub-flooring, cross bracing etc.) as needed.
2. Cleaning and application of Anti-Microbial Solution to Hvac ducts, coils and plenum wipe down and Hepa vacuuming.

### Post-abatement Sampling:

1. If required, non-viable spore trap and swab/tape sampling mirroring the initial series of tests should generally take place for clearance. Arrowhead Consulting Inc. is able to provide this post remediation clearance testing. Once the labs are analyzed, and the project passes clearance, Arrowhead Consulting Inc. will provide you the client with a Certified Clearance Letter and Laboratory Analysis confirmation.

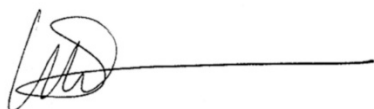
**Note: Clearance testing should be performed prior to encapsulation or the replacement of any removed building materials.**

Remediation guidelines are generated by Arrowhead Consulting Inc. at the request of and for the exclusive use of [REDACTED] and Yolanda Pinkney. Copies of same will not be released by Arrowhead Consulting Inc. to any third party without the prior express written consent from the client named in this report. This report applies to those conditions at the time, place and location referenced in this report. This report makes no express or implied warranty or guarantee as to the implementation methodology used by the client. Arrowhead Consulting Inc. is not able to assess the degree of hazard resulting from implementation of these guidelines, or from personal exposure to mold.

**DISCLAIMER:** The information regarding the health significance of mold types contained in this report is for informational purposes only and should not be used to replace professional medical advice. Content in this report does not contain information on all diseases, ailments, physical conditions or their treatment. It is best to seek advice and attention from your physician or qualified healthcare professional

If you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,



William R. Spearman CIE, CMRS  
Arrowhead Consulting Inc.  
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Certified Remediation Reports  
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