

DATE: October 15, 2014

**TO:** Brian McCoo, Principal

**SUBJECT:** Durham MS - IAQ - Results report - Room 2595

On Tuesday 10/14, Apex-Titan Air tested Room 2595. It is typically assumed that indoor spore levels in an area with filtered or air conditioned air, and activity levels associated with schools average 10% to 40% of the outdoor levels. Data from the airborne fungi sampling indicated that the total indoor concentration of mold/fungi in Room 2595, was **2.9%** of the outdoor levels. Utilizing this theory, the indoor concentrations are within the acceptable guidelines for areas with filtered air or air conditioning. If you have any questions, please call me. Thanks,

Paul

Paul Siddall Maintenance Energy Auditor (IAQ) Facility Services Lewisville ISD 469-446-8882



October 17, 2014

Lewisville Independent School District 340 Lake Haven Lewisville, Texas 75057 Attn: Mr. Paul Siddall

Re: Limited Mold Assessment Services Durham Middle School Room 2595 2075 Edmonds Lane Lewisville, Texas Apex Project No. 7210114H260 LISD PO No. 91505148-00

## Introduction

Apex TITAN, Inc., a subsidiary of Apex Companies, LLC (APEX) conducted limited mold assessment activities for the Lewisville Independent School District (Lewisville I.S.D.) within Durham Middle School located at 2075 Edmonds Lane in Lewisville, Texas (hereinafter referred to as the "Site"). The investigation was limited to areas of the Site identified by Lewisville I.S.D. as described below. The assessment was performed by Mr. Clinton S. Jech, a State of Texas licensed Mold Assessment Technician (Lic. No. MAT1075) on October 10, 2014. Apex's mold services definitions and limitations are included as an attachment to this report.

## Investigation Areas

Lewisville I.S.D. identified the following physical portions of the Site as the target investigation areas ("Investigation Areas") for mold assessment: readily accessible areas within room 2595. Apex's mold assessment services were limited to the Investigation Area(s) identified by Lewisville, I.S.D. Additional areas or portions of the Site were out-of-scope and not included in Apex's mold assessment or this report at this time.

## Scope of Work

As set forth in Apex's Mold Assessment Proposal (No. P0114H1382) dated October 7, 2014. Apex's scope-of-work was to provide visual and/or analytical mold assessment and related services in the Investigation Areas which included:

Visual Reconnaissance: Apex performed a visual reconnaissance of the Investigation Areas for visible indications of moisture intrusion (as indicated by staining or visible moisture) and/or suspect mold growth. Apex's visual reconnaissance only included readily accessible or visible portions of the Investigation Areas.

Suspect Mold Growth Sampling and Analysis: Apex collected limited ambient air samples for nonviable mold spores utilizing Air-O-Cell cassettes. "Air-O-Cell" refers to slit impaction air sampling cassettes manufactured by Zefon Analytical Accessories, St. Petersburg, Florida.

## Site Reconnaissance Observations/Findings and Recommendations

Apex' Mold Assessment Site reconnaissance was performed on October 10, 2014 by Mr. Clinton S. Jech. Apex's visual reconnaissance of the Investigation areas revealed the following:

## Temperature and Relative Humidity

Temperature readings collected inside the room was reported as 73.0 degrees Fahrenheit while relative humidity was reported as 47.3 percent. Temperature readings collected outside the building ranged from 90.1 to 91.9 degrees Fahrenheit while outside relative humidity ranged from 37.9 to 41.1 percent.

Relative humidity is a measure of the moisture content of air and is closely tied to the comfort of the office/workplace temperature. As with temperature, there are no regulations governing acceptable office/workplace humidity ranges. Humidity levels in the office/workplace are not only related to health effects, but also have operational impacts on modern office equipment.

Workplace/office temperatures have historically been considered a subjective factor because the perception of uncomfortable temperature levels is specific to each individual. There are no regulations governing acceptable office/workplace temperature ranges, but significant research has been conducted which indicates that there are temperature ranges that are not only comfortable but also result in optimum performance. ASHRAE (American Society of Heating, Refrigerating & Air Conditioning Engineers) has published guidelines describing thermal environmental conditions that at least 80% of the persons who occupy that environment will find acceptable or "comfortable." Table I below explains the applicable limits and guidelines.

	Table I	
A	cceptable Ranges Of Temperature	And Humidity
Relative Humidity	Winter Temperatures	Summer Temperatures
30%	68.5 to 76°F	74 to 80°F
40%	68.5 to 75.5°F	73 to 79.5°F
50%	68.5 to 74.5°F	73 to 79°F
60%	68 to 74°F	72.5 to 78°F

Apex utilized a Protimeter Moisture Measurement System (MMS) instrument (Model No. BLD2000) to measure and diagnose dampness in the drywall within random areas. The MMS is a battery powered handheld unit that is equipped with hydrostick probes to measure moisture content in wood, drywall and other and non-conductive materials. The device measures electrical conductivity of building materials and compares the conductivity readings to an internal, electronic standard reading for normal or "dry" materials.

Moisture content readings were obtained by pushing the moisture probe pins into surfaces. The measured values were then displayed on a colored scale depicting if the materials measured were normal (dry), higher than normal but not critical (at risk) or contained excessive moisture levels (wet). Based on the manufacturer's guidelines, the instrument measurement values are described below:

< 5%	Out of Range
> 5% but < 16%	Normal
> 17% but < 20%	Higher than Normal but Not Critical
> 20%	Excessive Moisture Levels

Moisture meter readings taken from the walls within the room was ranged from 10 to 12% which is considered normal by the manufacturer.



## Air Monitoring Results

Apex collected one (1) sample from the interior of the investigation area and two (2) samples from the exterior of the building. The microbial samples were analyzed by Steve Moody Micro Services, Inc. (SMMS) in Farmers Branch, Texas; SMMS is a State of Texas licensed mold analysis laboratory and accredited under the AIHA Laboratory Quality Assurance Program for Environmental Microbiology.

Air testing performed using spore traps indicated that total airborne mold spores in the room lower as compared to those measured outside of the building at the time the sampling was performed. The total fungal spore concentration within the investigation area was reported as 128 counts/m<sup>3</sup>, while the exterior level ranged from 3,251 to 4,451 counts/m<sup>3</sup>.

The American Conference of Governmental Industrial Hygienists (ACGIH) sets forth assessment criteria related to the "indoor/outdoor" relationship where the indoor air quality should be at or below that of outdoor air quality with regard to fungal spores (see ACGIH Bioaerosols, Assessment and Controls publication, 1999).

### Suspect Mold

No visible mold was observed during the assessment. No odors or excessive dust were noted.

### **Conclusions and Recommendations**

Based on Apex's limited assessment and the analytical results collected, it appears that the indoor air quality, as it relates to airborne fungi was within recommended guidelines.

If you have any questions regarding this report or if we can assist you with any other matter, please contact the undersigned at (214) 350-5469.

Sincerely, **Apex TITAN, Inc.** 

E.L.

Darren G. Bowden Senior Program Manager Industrial Hygiene Services Texas Mold Assessment Consultant Lic. No. MAC0321

Attachments: Analytical Results/Chain of Custody, Mold Services Definitions & Limitations



## ATTACHMENT 1

Analytical Results/Chain of Custody



# **IAQ Mold Report Summary**

Steve Moody Micro Services, LLC

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

**Client :** Apex TITAN, Inc. - Dallas, TX

**Project :** Durham MS Room 2595

Sample Type: Spore Trap, Non-cultured

7210114H260 Project # :

Sample Date : 10/10/2014

Spore Trap Type: Zefon - Air-O-Cell

Lab Job No. 14F-12814 **Report Date** 10/14/2014

Test Method: Mold: ASTM D7391-09 - Standard Profile

On 10/10/2014, three (3) samples were submitted by Clint Jech of Apex TITAN, Inc. - Dallas, TX (located at 2351 W. NW Highway #3321, Dallas, TX 75220) for Spore Trap, Non-cultured mold analysis. This report consists of three sections; a summary section, a data detail section, and an analytical notes section.

terior, East	Basidiospores Cladosporium Hyphal / Spore Fragments Aspergillus / Penicillium Ascospores Myxomycete / Rust / Smut Nigrospora Agrocybe Pithomyces Pyricularia Torula Drechslera / Bipolaris group	1413 853 333 213 173 133 27 27 27 27 13 13 13	43% 26% 10% 7% 5% 4% <1% <1% <1% <1% <1%
	Alternaria	13	<1%
terior, West	Total: Cladosporium Basidiospores Hyphal / Spore Fragments Ascospores Myxomycete / Rust / Smut Aspergillus / Penicillium Alternaria Coprinus group Fusarium Pithomyces Pyricularia Drechslera / Bipolaris group Curvularia	3251 1613 1573 480 213 173 173 173 67 53 40 27 13 13 13 13 4451	100% 36% 35% 11% 5% 4% 4% 2% 1% <1% <1% <1% <1% <1%
		Ascospores Myxomycete / Rust / Smut Aspergillus / Penicillium Alternaria Coprinus group Fusarium Pithomyces Pyricularia Drechslera / Bipolaris group	Ascospores213Myxomycete / Rust / Smut173Aspergillus / Penicillium173Alternaria67Coprinus group53Fusarium40Pithomyces27Pyricularia13Drechslera / Bipolaris group13Curvularia13

DSHS License No.: LAB0117

3:20 PM

Page 1 of 2

AIHA EMPAT ID: 102577

## **IAQ Mold Report**

Steve Moody Micro Services, LLC

2051 Valley View Lane

Farmers Branch, TX 75234 Phone: (972) 241-8460

Apex TITAN, Inc. - Dallas, TX **Client :** 

**Project :** Durham MS Room 2595

Project # : 7210114H260

Lab Director : Bruce Crabb

Sample Date : 10/10/2014

**Report Date** 10/14/2014 3:20 PM

Lab Job No. 14F-12814

Sample Type: Spore Trap, Non-cultured

Spore Trap Type: Zefon - Air-O-Cell

Approved Signatory : Bune Cull

Test Method: Mold: ASTM D7391-09 - Standard Profile

On 10/10/2014, three (3) samples were submitted by Clint Jech of Apex TITAN, Inc. - Dallas, TX (located at 2351 W. NW Highway #3321, Dallas, TX 75220) for Spore Trap, Non-cultured mold analysis. This report consists of three sections; a summary section, a data detail section, and an analytical notes section.

Sample Number	Volume (liters)	Sample Description	Identification		ntration ibic meter
3	150	Room 2595	Hyphal / Spore Fragments Basidiospores Agrocybe Drechslera / Bipolaris group Curvularia	27 27 13 13 13	21% 21% 10% 10%
			Nigrospora	7	5%
			Pithomyces	7	5%
			Myxomycete / Rust / Smut Cladosporium	7	5% 5%
			Aspergillus / Penicillium	7	5%
			Total:	128	100%
the results contained her Steve Moody Micro Ser SMMS assumes no resp	rein. Interpre	tation should be made by a qualified profession es no responsibility for the manner in which the r the qualifications of personnel performing sam	se samples were collected or handled prior to being received		

Thank you for choosing Steve Moody Micro Services

Summary

DSHS License No.: LAB0117 AIHA EMPAT ID: 102577

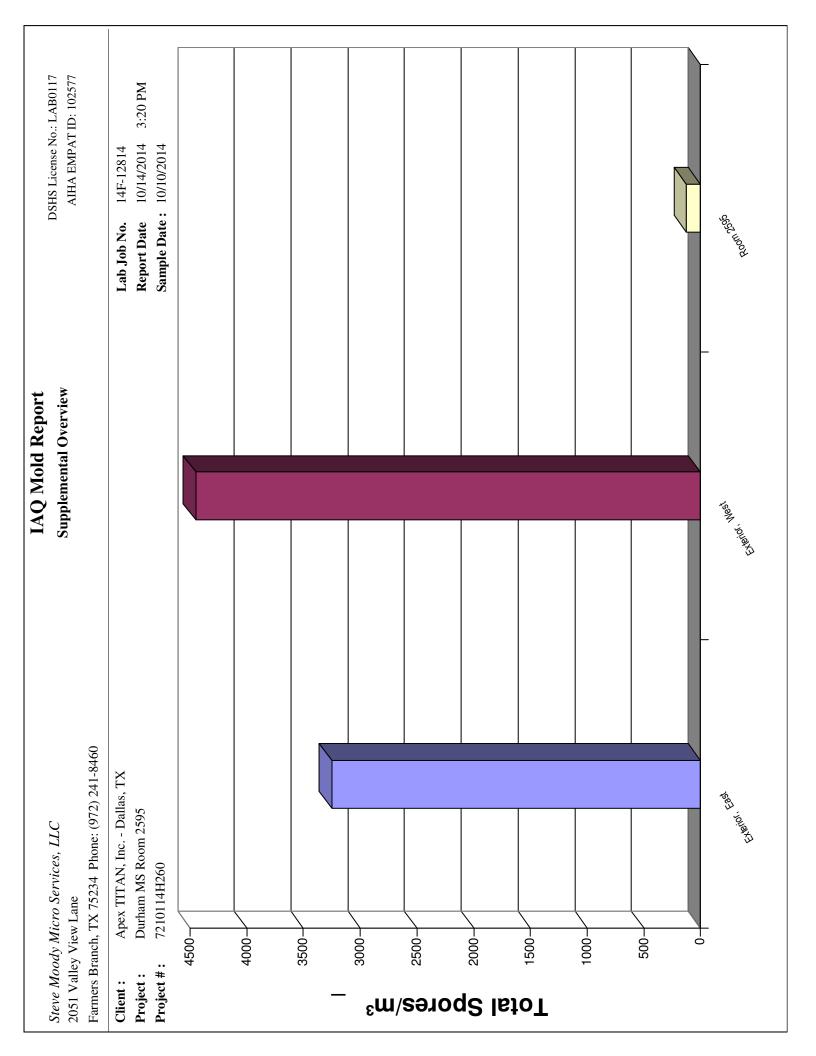
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Test Method:	Mold: ASTM D7391-	09 - Sta	andard	Profile								Page 1 c	of 1
This report consists	of three sections; a summa	ry sectior	n, a data	detail sectio	n, and a	an analyt	ical not	es section. R	esults n	nay not b	e report	ed except in	full.
Sample ID:				1				2				3	
Location:			Exter	ior, East			Exteri	or, West			Roc	m 2595	
Media Expires C	)n:		Fe	b 2015			Fel	o 2015			Fe	b 2015	
Notes Included:													
Volume:				75				75				150	
		raw ct.	MDL	spores/m <sup>3</sup>		raw ct.	MDL	spores/m <sup>3</sup>		raw ct.	MDL	spores/m <sup>3</sup>	
Agrocybe		2	13.33	27	<1%					2	6.67	13	10%
Alternaria		1	13.33	13	<1%	5	13.33	67	2%				
Ascospores		13	13.33	173	5%	16	13.33	213	5%				
Aspergillus / Pe	nicillium	16	13.33	213	7%	13	13.33	173	4%	1	6.67	7	5%
Basidiospores		106	13.33	1413	43%	118	13.33	1573	35%	4	6.67	27	21%
Chaetomium													
Cladosporium		64	13.33	853	26%	121	13.33	1613	36%	1	6.67	7	5%
Coprinus group						4	13.33	53	1%				
Curvularia						1	13.33	13	<1%	2	6.67	13	10%
Drechslera / Bip	olaris group	1	13.33	13	<1%	1	13.33	13	<1%	2	6.67	13	10%
Fusarium						3	13.33	40	<1%				
Hyphal / Spore	Fragments	25	13.33	333	10%	36	13.33	480	11%	4	6.67	27	21%
Memnoniella													
Myxomycete / R	ust / Smut	10	13.33	133	4%	13	13.33	173	4%	1	6.67	7	5%
Nigrospora		2	13.33	27	<1%					1	6.67	7	5%
Pithomyces		2	13.33	27	<1%	2	13.33	27	<1%	1	6.67	7	5%
Pyricularia		1	13.33	13	<1%	1	13.33	13	<1%				
Stachybotrys													
Torula		1	13.33	13									
TOTALS		244		3251	100%	334		4451	100%	19		128	100%
Analyst			Rebe	ecca Lutz			Rebe	ecca Lutz			Rebe	ecca Lutz	
Analysis Date			10/1	14/2014			10/1	4/2014			10/	14/2014	
Debris Rating				2				3				3	
Debris Composi	tion												
Fibers				1/5				2/5				2/5	
Inorganic/Othe	r			2/5				3/5				3/5	
Insect Parts				0/5				1/5				0/5	
Pollen				0/5				2/5				0/5	
Skin/Dander				1/5				1/5				3/5	

#### IAO Mald D •

	IAQ Mold Report	
Micro Services, LLC iew Lane h, TX 75234 Phone: (972)	Analytical Notes	DSHS License No.: LAB0117 AIHA EMPAT ID: 102577
Durham MS Room 2595 7210114H260 Spore Trap, Non-cultured Mold: ASTM D7391-09 - S s of three sections; a summary sect ormalities or exceptions no	Reg Sample Date : 10/10/2014 Spore Trap Type: Standard Profile ion, a data detail section, and an analytical notes section oted during analysis. All samples suitable	
tical Microscopy. Spores/cubic meter = (Raw s Minimum Detection Limit) Micro Services recommends	spore count)*(MDL) is calculated based upon 1 raw spore count s two significant figures for calculated value	es based on ASTM D7391-09.
	iew Lane h, TX 75234 Phone: (972) 2 Apex TITAN, Inc Dallas Durham MS Room 2595 7210114H260 Spore Trap, Non-cultured Mold: ASTM D7391-09 - S s of three sections; a summary section ormalities or exceptions no ernable field blanks were i "M D7391-09: Categorizatio tical Microscopy. Spores/cubic meter = (Raw s Minimum Detection Limit) Micro Services recommends ast not be used by the custom the Federal Government. hg Key detected.	iew Lane h, TX 75234 Phone: (972) 241-8460 Apex TITAN, Inc Dallas, TX Lal Durham MS Room 2595 Rep 7210114H260 Sample Date : 10/10/2014 Spore Trap, Non-cultured Spore Trap Type: Mold: ASTM D7391-09 - Standard Profile s of three sections; a summary section, a data detail section, and an analytical notes section ormalities or exceptions noted during analysis. All samples suitable ernable field blanks were included with this sample set. M D7391-09: Categorization and Quantification of Airborne Fungal S tical Microscopy. Spores/cubic meter = (Raw spore count)*(MDL) Minimum Detection Limit) is calculated based upon 1 raw spore count Micro Services recommends two significant figures for calculated value ist not be used by the customer to claim product certification, approval, the Federal Government. ng Key detected.





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Steve Moody Micro Services, LLC 
Querto 2051 Valley View Ln. 
Farmers Branch, TX 75234 
Phone (972) 241-8460 
Fax (972) 241-8461
Querto 134-2014
Querto 134-2014

## ATTACHMENT 2

Mold Services Definitions & Limitations/Standard of Care and Reliance





## **Mold Services Definitions & Limitations**

*"Mold" defined*. Mold is a general term used to describe various types of singled-celled naturally occurring biological organisms occurring worldwide. For purposes of this report (and the Texas Mold Assessment & Remediation Rules), the term "mold" is broadly defined to include any living or dead fungi or related products or parts, including spores, hyphae, and mycotoxins.

*Limited Scope of Mold Assessment.* The scope of Apex's mold assessment services as reflected in the Proposal and this report are limited in that (i) they were physically limited to certain portions of the building structure (e.g., the Client identified Investigation Areas); and (ii) limited by accessibility to building materials or components within the Investigation Area(s). In contrast to a Limited Assessment" is a comprehensive assessment, which involves destructive sampling methods and the scope of the assessment typically extending to the entire building structure.

*Time sensitive*. Mold assessments are essentially a *"snap shot in time,"* and the results are only relevant at the time of site reconnaissance. Because mold, when biologically active, is a living organism, its presence is influenced and controlled by environmental conditions. Mold assessments, therefore, are *"time sensitive"* in that the presence and concentration of mold and similar organisms in building structures or in the air is directly influenced by environmental conditions (such as humidity, moisture, nutrients and substrates), whether natural or caused by man, which conditions may vary significantly over relatively short periods of time.

*Methodologies.* Currently, mold assessment methodologies and protocols in Texas are governed by persuasive guidelines (rather than promulgated federal/state or local regulations). Presently, there is no data that supports a threshold limit or dose-response relationship for exposure to mold aeroallergens, individual pathogens, opportunistic pathogens and/or mycotoxins. The Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety and Health (NIOSH) and other non-governmental associations, have not yet established permissible exposure limits (PELs), recommended exposure limits (RELs), or other limit values for aeroallergens. Because no limit values presently exist, Apex will not and cannot represent that the site contains no harmful microbes, mold, fungi, or their metabolites, or other latent conditions beyond those identified by the limited scope of this mold assessment.

*Findings limited.* Findings from a limited mold assessment are limited because of the nature of the information obtained (e.g., visual reconnaissance of readily accessible areas of building structures, interview information, anecdotal information, and limited sampling data derived from one or more specific sampling events). Apex cannot warrant the accuracy of prior or subsequent information/data, reports and services performed by other firms at the Site. Apex assumes no responsibility or liability for errors in information or data provided by or through the client or third party sources. Apex's services are not to be construed as legal or medical interpretation or advice.

*Moisture Intrusion Limitation.* Apex performs mold assessment services and is not a moisture intrusion, HVAC, roofing, plumbing or building envelope specialist. However, during the course of conducting its mold assessment services, Apex will report observed areas of apparent moisture intrusion. Apex does not and will not investigate the cause or causes of such observed moisture intrusion. In the event apparent moisture intrusion is observed, Apex will recommend

that the client contact a specialist (i.e., plumbing contractor, building envelope specialist, HVAC contractor, water intrusion specialist, etc.) to assist the client in determining the specific cause or causes of the moisture intrusion and remedial options.

*Texas Licensing Requirements.* Apex (and/or its personnel) will render the services set forth in this proposal in the capacity of a Texas licensed Mold Assessor. Apex is not licensed as a Mold Remediation Contractor and does not perform mold remediation. As of January 1, 2005, Texas law has required that Mold Assessors and Mold Remediation Contractors be licensed.

*Mold Remediation Certificate.* For mold remediation projects (above certain size thresholds), applicable Texas law (i.e., Texas Occupation Code Section 1958.54 and T.A.C. Section 295.397 (the Texas Mold Assessment and Remediation Rules), requires that a "Certificate of Mold Remediation" be issued by the Mold Remediation Contractor upon successful completion of the project. This certificate must be provided to property owners no later than the 10<sup>th</sup> day after the date on which the mold remediation is completed at a property. The Mold Remediation Certificate issued by the Mold Remediation Contractor must include a certification by the Mold Assessor that the mold remediation project has been successfully completed in accordance with the mold remediation protocol.

Be advised that Apex's issuance of a Mold Remediation Certificate upon successful completion of a Mold Remediation project does not mean, warrant or otherwise guarantee that mold will not be subsequently found in any portion of the Investigation Area or the Site. In the event that Apex is engaged to render services in connection with a mold remediation project, Apex will require *Client to provide to Apex a signed certificate prepared by Client's moisture intrusion specialist or appropriate contractor stating that all sources of moisture which resulted in the presence of mold in the Investigation Area have been fully remediated and corrected.* 

## Standard of Care

Apex performed its Services in accordance with generally accepted practices of the profession undertaken in similar services at the same time and in the same geographical area. No other warranties, expressed or implied, apply to the Services hereunder or this report.

## Reliance

Apex's proposal for this project, services and this report have been prepared on behalf of and for the exclusive use of Lewisville Independent School District solely for their use and reliance in assessing the presence of mold in the Investigation Areas of the site. Lewisville Independent School District is the only party to which Apex explained the risks and limitations of the services and was solely involved in shaping the scope of services. Accordingly, reliance on this report by any other party may involve assumptions leading to an unintended interpretation of findings and opinions. With the consent of the client, Apex may offer reliance to third parties or contract with other parties to develop findings and opinions related to such party's unique risk management concerns. Notwithstanding the foregoing, reliance by any and all third parties upon the proposal, the Services or this report shall be limited in the aggregate to all relying parties to the fair market value of the Services provided by Apex.

